CGKV Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364

FEASIBILITY STUDY FOR THE ON-GOING USE OF WESTPORT MIDDLE SCHOOL

400 OLD COUNTY ROAD
WESTPORT, MASSACHUSETTS

SEPTEMBER 23, 2013








TABLE OF CONTENTS

EXECUTIVE SUMMARY

Westport Community Schools acted with concern and urgency upon the discovery of PCBs at Westport Middle School. The 2011 PCB Source Removal Project was a complex and costly undertaking that removed the majority of PCB Bulk Product Materials, reduced concentrations of PCBs in the air, and allowed for re-occupation of the school in September 2011.

Current conditions at Westport Middle School are not sustainable, however. The presence of remaining PCB Primary Source Materials and PCB Remediation Wastes is subject to United States Environmental Protection Agency (USEPA) and Toxic Substance Control Act (TSCA) regulations. USEPA may demand that remaining PCBs be removed and/or encapsulated at any time.

The purpose of this Feasibility Study is to examine what actions may be necessary to allow the ongoing and long-term use of the building as a middle school facility. If Westport Community Schools decides to continue to use Westport Middle School as a middle school facility, remaining PCB Bulk Product Materials must be fully removed from the building in accordance with USEPA requirements. PCB Remediation Waste, those materials that absorbed PCBs through direct contact with source materials or exposure to contaminated indoor air and/or dust, must also be addressed to allow on-going occupancy of the building by middle-schoolers. PCB Remediation Waste may be either removed completely or encapsulated. CGKV considers a project to fully remove all potential PCB Remediation Waste to be infeasible, at a cost of around $37,900,000. We instead recommend a combination of removal and encapsulation of PCB-contaminated building materials.

Work to address PCB Bulk Product Materials and PCB Remediation Waste can result in, or expedite, other beneficial improvements to Westport Middle School not directly affected by PCBs. Elective improvements such as roof replacement and HVAC upgrades would be a sensible investment in the long term use of the building. Codes and regulations might mandate other building improvements, such as accessibility upgrades, seismic upgrades, or automatic sprinklers.

Options for remediating and renovating Westport Middle School range from a low of around $7,500,000 to a high of around $37,900,000. The estimated cost of constructing a brand new middle school of equal size ranges from $33,000,000 to $38,500,000.

This Study recommends a combination of removal and encapsulation of PCB-contaminated building materials, along with related beneficial improvements to building assemblies and systems that will support the on-going use of the building as a middle school facility. The

specific options recommended in this Study have an estimated probable construction cost of around $16,300,000. It is our intention, however, that Westport Community Schools evaluate the full range of issues and options presented in this Study in order to determine possible solutions that will meet the needs of the community as a whole.

CGKV recognizes that public perception will play an important role in determining the future of Westport Middle School. We hope that this Study provides an objective background to help facilitate the community's discussion.

Jason Knutson, AIA
Principal
CGKV Architects, Inc.

A. BACKGROUND

Westport Middle School was designed by the architecture firm Drummey Rosane Anderson and constructed ca. 1969/1970. In 2010, Westport Community Schools (WCS) submitted a Statement of Interest to the Massachusetts School Building Authority (MSBA) indicating the need for "replacement, renovation or modernization of school facility systems, such as roofs, windows, boilers, heating and ventilation systems, to increase energy conservation and decrease energy related costs in a school facility." The MSBA invited WCS to participate in the Green Repair Program, which was established in 2010 to provide partial reimbursement (funded by Qualified School Construction Bonds that were established by the American Recovery and Reinvestment Act) to public school districts undertaking energy efficiency projects of limited scope at school facilities that were otherwise structurally, functionally, and educationally sound. Westport Middle School was approved for a project to replace the building's original windows and doors. In 2011, WCS contracted with CGKV Architects, Inc. (CGKV), a design firm pre-approved by MSBA, to undertake Feasibility Study and Schematic Design efforts on the proposed window and door replacement project.

As part of the window and door replacement study, CGKV and its team of engineers and consultants began an in-depth evaluation of the existing school building by examining original construction documents made available by WCS and by observing and documenting actual conditions on site. This due diligence process included a Limited Hazardous Building Materials Inspection by CGKV's Environmental Consultant, Fuss & O'Neill EnviroScience, LLC (EnviroScience). EnviroScience licensed personnel inspected and sampled for possible hazardous materials associated with window and door systems to be replaced. EnviroScience's findings were summarized in a report dated May 25, 2011. EnviroScience determined that interior window glazing compound, exterior window caulk, and interior door caulk contained some amount of asbestos. Lead paint was not found on the representative surfaces tested during EnviroScience's inspection.

During their inspection, EnviroScience also collected samples of window and door caulk and glazing compounds to be analyzed for Polychlorinated Biphenyls (PCBs). The materials sampled were determined to contain PCBs at concentrations regulated by the United States Environmental Protection Agency (USEPA) based on the limited representative samples collected. The discovery of PCBs which exceed USEPA maximum allowable concentrations is considered a prohibited or "unauthorized" use of PCBs according to the Toxic Substance Control Act (TSCA) and is therefore subject to the requirements that the materials be removed in accordance with USEPA regulations. The detection of PCBs brought the window and door replacement project to a halt, and attention shifted to addressing the immediate concerns over PCBs at the school.

The next step for EnviroScience, authorized June 2, 2011 by WCS, was to proceed with further sampling and testing of adjacent substrates to identify remediation wastes for materials in contact with or potentially contaminated by PCBs. These included masonry, concrete, soil, interior dust, and air. Tests showed PCB concentrations in adjacent masonry and concrete, and in soil and concrete paving below windows and doors, above USEPA thresholds for a "high occupancy building" (as Westport Middle School would be classified). PCB contamination was also discovered in wipe samples at interior sills and interior floors. Lab analysis of interior air samples showed PCB concentrations above USEPA guidelines for children ages 6 to 12 at 8 out of the 13 locations tested.

EnviroScience proceeded to investigate and sample additional possible sources of interior PCB contamination. PCBs in concentrations higher than USEPA guidelines were found in the mastic above Tectum form planks, in interior caulk between concrete columns and masonry, and in a compressible foam-like infill between concrete columns and adjacent plaster walls.

In the summer of 2011, EnviroScience and WCS worked with USEPA to establish suggested next steps for addressing PCB Primary Source Materials and elevated air and dust samples in order to allow occupancy of the building for the 2011-2012 academic year. A complex and intensive project to remove Primary Sources of PCBs ensued, involving two shifts, six days per week, and over 100 workers and two project monitors. 70,000 SF of PCB and asbestos ceiling mastic and over 6,000 LF of PCB caulk were removed. Remediation work also included complete cleaning to meet USEPA standards. 90% of Westport Middle School was available for use for a September 8, 2011 opening, with air samples meeting USEPA guidelines.

EnviroScience's report titled Polychlorinated Biphenyls (PCBs) Source Removal Project Report and Management Plan, dated April 1, 2013, describes in detail the actions taken to identify and address PCBs at Westport Middle School during 2011. It is important to note that the project was intentionally not designed to remove all PCBs but, rather, to conduct enough removal of identified sources of PCBs to reduce air concentrations which would allow occupancy within a very restricted timeframe. Additionally, the project did not pursue testing of all possible sources of PCBs in the building, but instead focused on a significant number of materials from a volume perspective with regulated PCBs. The completion of the 2011 PCBs Source Removal Project, diligent monitoring and routine air sampling has allowed the continuing occupancy of the building by its student population. However, these efforts did not remove all PCB-containing and PCB-contaminated materials, and did not address the long term occupancy of the building by middle school-aged students.

Current conditions at Westport Middle School are not sustainable. The presence of remaining PCB Primary Source Materials and PCB Remediation Wastes is subject to

USEPA and TSCA regulations. USEPA may demand that remaining PCBs be removed and/or encapsulated at any time. In its present condition, the building is under a site use restriction, air and wipe samples must be tested at least yearly, coatings used to encapsulate PCB Remediation Wastes (and asbestos) must be monitored, and special cleaning practices must be followed. An extensive Operations and Maintenance Plan prepared by EnviroScience reflects the controls necessary for PCBs identified as remaining after the PCB Source Removal Project of 2011. The general intent and purpose of the Operations and Maintenance program is to ensure the continued health and safety of building occupants as well as the maintenance personnel and outside contractors who may come into contact with PCB-containing materials.

The purpose of this Feasibility Study is to examine what actions may be necessary to allow the ongoing and long-term use of the building as a middle school facility. Possible actions may include removal of remaining PCB-containing and PCB-contaminated materials, encapsulation of contaminated materials, replacement of windows and doors, reconfiguration of exterior rough openings affected by hazmat work, restoration or replacement of interior finishes impacted by previous and potentially future remediation, and modifications to building ventilation components.

This Feasibility Study will: provide a physical description of the building and site; identify PCB Bulk Product Materials, describe steps taken during 2011 to remove these materials, and indicate where these materials still exist within the building; identify known and potential PCB Remediation Wastes; describe current building conditions and restrictions; discuss alternative concepts for the on-going use of Westport Middle School as a middle school; describe the work likely necessary to remove remaining PCB Bulk Product Materials; describe the work likely necessary to remove and/or encapsulate remaining PCB Remediation Wastes; propose additional modifications or improvements to the facility to accommodate on-going use; discuss modifications or improvements to the facility that might be mandated by other codes or regulations; and compare attributes of the existing Westport Middle School facility versus a newly constructed replacement facility.

Preparation of this Feasibility Study relied on the contributions of numerous parties, including but not limited to:

Dr. Carlos M. Colley, Superintendent, Westport Community Schools
Mr. Mike Duarte, Supervisor of Maintenance, Westport Community Schools
Ms. Kimberly Ouellette, Supervisor of Custodians, Westport Community Schools
Mr. Robert L. May, Jr, Fuss & O'Neill EnviroScience, LLC (Hazardous Materials)
Mr. Robert S. T. Lie, PE, Lin Associates, Inc. (Structural Engineer)
Mr. Stephen J. Montibello, PE, Fitzemeyer & Tocci Associates, Inc. (M/E/P/FP Engineers)
Mr. Peter T. Timothy, A. M. Fogarty & Associates, Inc. (Cost Estimator)
Administrators, Faculty, and Staff at Westport Middle School

[Page left intentionally blank.]

B. DESCRIPTION OF EXISTING BUILDING

Constructed ca. 1969/1970, Westport Middle School is a two-story building (plus basement mechanical space) comprising approximately 115,000 gross square feet. Its structure is typically cast-in-place concrete, with brick veneer infill at exterior walls. Double height gymnasium and auditorium spaces (with load-bearing reinforced brick masonry perimeter walls and pre-cast concrete "tee" roof structure) are ringed by classrooms, administrative offices, library, cafeteria, and specialized teaching spaces. Interior partitions are typically masonry or light gauge metal framing with rock lath and plaster finishes.

The existing roof membrane is a ballasted EPDM system installed ca. 1990, with some seam repair work performed in 2009. Exterior windows are original to the building and are comprised of single-glazed fixed and projected windows with metal frames that are not thermally broken. Exterior metal doors and frames are likewise typically original to the building.

The school's heat plant consists of three cast iron hot water boilers installed ca. 1999. Heating and ventilation throughout most of the school is provided by approximately 60 unit ventilators, either floor mounted or ceiling mounted. Larger spaces, such as the gymnasium, auditorium, and cafeteria, are served by around 6 rooftop air handling units. Approximately 29 roof mounted fans provide general and toilet room exhaust. Unit vents, air handling units, and exhaust fans are generally original to the building.

Westport Middle School is located on a seven acre site in a rural setting. The site is relatively flat, with a moat-like grass drainage swale encircling the building. Paved walkways and courts are located at exterior entrances. There are tennis courts and playing fields just to the North of the building. Landscaping is primarily grass lawns, with a limited quantity of trees and shrubs around the building. Westport Middle School has its own water and septic systems.

The original ca. 1968 construction documents do not include information about building code compliance. In accordance with the current Massachusetts State Building Code, Westport Middle School would likely be considered to be Construction Type I. Its principal Use and Occupancy Classification would be Educational Group E, with ancillary uses including B - Business, A - Assembly, and S - Storage. In 2012-2013, Westport Middle School housed 544 students and 65 faculty and staff.

[Page left intentionally blank.]

C. PCB BULK PRODUCT MATERIALS (PRIMARY SOURCES OF PCBs); 2011 PCB SOURCE REMOVAL PROJECT; PCB BULK PRODUCT WASTE MATERIALS REMAINING

Polychlorinated biphenyls (PCBs) are a class of organic chemicals that were used in a variety of building materials from the 1950s to the late 1970s. PCB Bulk Product Materials are defined as those building products that were manufactured containing PCBs or that had PCBs added during construction. They are also called Primary Sources of PCBs. PCBs were once used especially as plasticizers – substances for providing flexibility and elongation – in caulking materials because of their compatibility with the base resin or binder in the caulk (EPA/600/R-11/156). Per USEPA, Primary Sources of PCBs that might be found in current buildings include caulk or other sealants, window glazing compounds, fluorescent light ballast capacitors, ceiling tile coatings, and possibly other materials such as paints or floor finishes (EPA/600/R-12/051).

In 1979, the USEPA banned the commercial production of PCBs due to health and environmental concerns. PCBs are regulated by the Toxic Substances Control Act (TSCA). Current regulations require the removal of materials using PCBs if their PCB content is above a concentration of 50 parts per million (ppm).

Investigations by EnviroScience to date identified the following PCB Bulk Product Materials at Westport Middle School with PCB concentrations exceeding USEPA guidelines of >50 ppm. In keeping with USEPA practice, the word "caulk" is used as a generic term for all types of caulking materials and sealants found in buildings.

A project to remove interior and exterior identified Primary Sources of PCBs as PCB Bulk Product Waste (i.e. – the 2011 PCB Source Removal Project) began at Westport Middle School on August 11, 2011. The work of that project is described below.

Not all PCB Bulk Product Waste was removed during the 2011 project due to time constraints and accessibility issues. PCB Bulk Product Wastes known or suspected to still exist within Westport Middle School are also described in this section.

1. Exterior Window Caulk:

Exterior window caulk seals the exterior joint between the existing metal window frame perimeter to the exterior rough (masonry) opening. The rough opening material at window jambs and sills is typically brick veneer, while the material at window heads is typically a cast-in-place concrete beam. The caulk joint allows for differential movement between the window and adjacent brick and concrete materials, and helps to prevent air and water infiltration to the wall cavity or

building interior. Some exterior window caulk had very high concentrations of PCBs, in the hundreds of thousands ppm in many cases. This caulk also contained asbestos. [Figure C-01]

Figure C-01: Exterior perimeter caulk at typical windows.

2011 PCB Source Removal:

All existing exterior caulk was raked out from the perimeter joint around all existing windows. Existing backer rods were also removed as PCB contaminated waste. The area of caulking removal was cleaned and new backer rod and silicone sealant were installed. [Figures C-02 and C-03]

PCB Bulk Product Waste Remaining:

None.

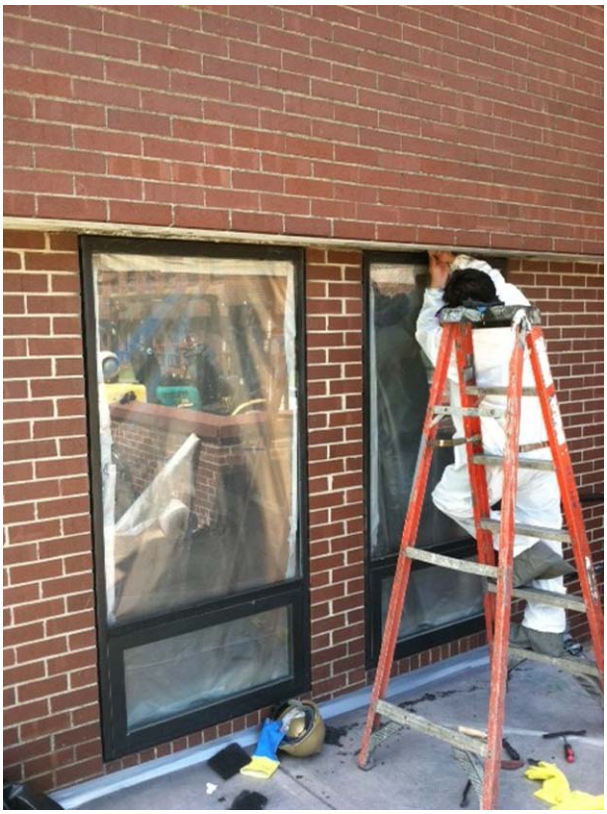


Figure C-02: Removal of exterior PCB-containing caulk at perimeter of windows. [*Photo courtesy of EnviroScience*]

Figure C-03: Exterior perimeter caulk at typical windows removed and replaced.

2. Exterior Doors - Exterior and Interior Caulk:

There are seven sets of aluminum-framed egress doors leading to the building exterior from the Lower Level (or from an intermediate level a few steps above the Lower Level, depending on exterior grade). Five exterior door locations exit from stairways and are two-story assemblies of glazed doors, sidelights, and transoms [Figure C-04]. Two of the exterior door locations exit directly from interior corridors and are one-story assemblies of glazed doors, sidelights, and transoms [Figure C-05]. PCB- (and asbestos-) containing caulk seals both the outer and the inner edges of the metal frame system to the adjacent rough (masonry) opening to prevent air and water intrusion. Rough opening material at all door jambs is typically brick veneer. Rough opening material at the two-story door heads at stair halls is Tectum form plank, and at one-story door heads at corridors is cast-in-place concrete.

There is also one aluminum-framed glazed storefront assembly exiting from the receiving area at the Upper Level, with brick at the jambs and a plywood soffit assembly at the head.

Figure C-04: Typical two-story exterior door assembly.

Figure C-05: Typical one-story exterior door assembly.

2011 PCB Source Removal:

Exterior and interior caulk at the perimeter of exterior door frames was removed only to a height of approximately 8'-0" above grade. The area of caulking removal was cleaned, and new backer rod and sealant were installed.

PCB Bulk Product Waste Remaining:

Removal of exterior and interior caulk at all exterior doors, including fixed glazing, above approximately 8'-0" is still required at all exterior door assemblies. See Section G.1, below.

Figure C-06: Exterior caulk at perimeter of door frame. (Note: photo is from before 2011 removal project.)

Figure C-07: Interior caulk at perimeter of door frame. (Note: photo is from before 2011 removal project.)

3. Exterior Expansion Joint Caulk:

Inside corners of the exterior brick veneer walls were originally constructed with expansion joints comprised of a continuous water stop, compressible filler, and caulk. [Figure C-08]

2011 PCB Source Removal:

All existing caulk was removed from exterior expansion joints. The area of caulking removal was cleaned, and new backer rod and silicone sealant were installed. [Figure C-09]

PCB Bulk Product Waste Remaining:

None.

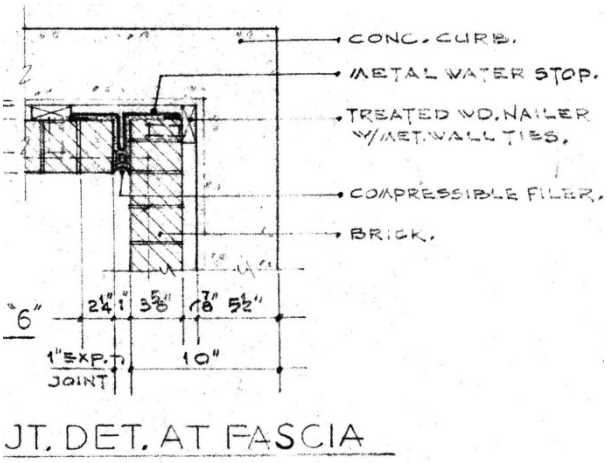


Figure C-08: [*From 1968 Drawing A-25.*]

Figure C-09: Caulk at exterior expansion joints removed and replaced.

4. Exterior Windows - Interior Glazing Compound:

A PCB-containing glazing compound seals the interior edge of window glass to the fixed or operable metal window frames and sashes. This glazing compound also contains asbestos.

Figure C-10: Interior glazing compound at typical windows.

2011 PCB Source Removal:

Removal of PCB source materials at interior glazing compounds at exterior metal windows was not practicable without replacement of the complete exterior window systems, so interior glazing compounds were left in place. Interim measures undertaken in 2011 included encapsulation of the existing interior glazing compound by applying a layer of new sealant over it. [Figure C-11]

PCB Bulk Product Waste Remaining:

Removal of PCB-containing interior glazing compound at exterior windows will require removal of the complete window system, including glazing, metal sashes, and metal frames. See Section G.2, below.

Figure C-11: Sealant applied over interior glazing compound at typical windows as part of the 2011 removal project.

5. Mastic Above Tectum Form Plank:

Tectum form plank panels are composed of wood fibers bonded and formed under heat and pressure. They were used as the underlying formwork for the placement of the cast-in-place concrete floor and roof slabs, and were left in place in many areas as a permanent part of the building construction to create a textured decorative ceiling finish that provides sound absorption, abuse resistance, and insulation. A mastic adhesive applied to the top surface of the Tectum form planks prior to concrete placement, possibly as a moisture barrier (though its actual purpose remains unclear), was found to contain PCBs and asbestos.

Figure C-12: Original Tectum form plank ceiling at typical classroom.

Figure C-13: Original Tectum form plank ceiling at typical stairway.

A different configuration of Tectum panel was also used as the ceiling finish in administrative offices, corridors, and other areas. These panels were installed in a suspended metal grid as acoustical ceiling tiles [Figure C-14]. Tectum form planks were generally not used as the formwork for cast-in-place floor and roof structures above these suspended ceiling areas [Figure C-15], and no PCB Bulk Products were noted by EnviroScience in these areas. [See Section G.3 below for exceptions to this general rule regarding Tectum form plank locations.]

Figure C-14: Tectum lay-in acoustical ceiling panels in suspended metal grid at Main Administration area.

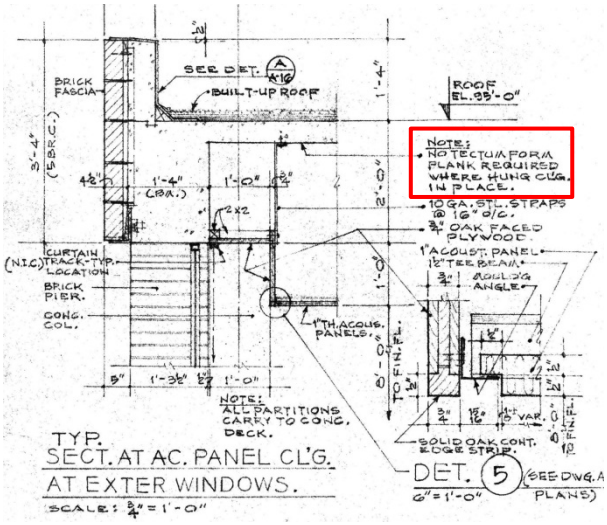


Figure C-15: Original detail drawing with note (in red box) indicating "no Tectum form plank required where hung clg. [ceiling] in place." [*From 1968 Drawing A-25.*]

2011 PCB Source Removal:

Tectum form planks located immediately below concrete floor and roof slabs were removed where exposed at classrooms, cafeteria, and media center. The remaining concrete ceilings were then scraped to remove the associated mastic which contained both PCBs and asbestos. Scraping and the use of mechanical chipping guns removed up to 95% of the mastic, and the concrete ceilings were then coated with a bridging encapsulant. [Figures C-16, C-17, C18]

Figure C-16: Removal of existing Tectum form plank and associated PCB-containing mastic. [*Photo courtesy of EnviroScience*]

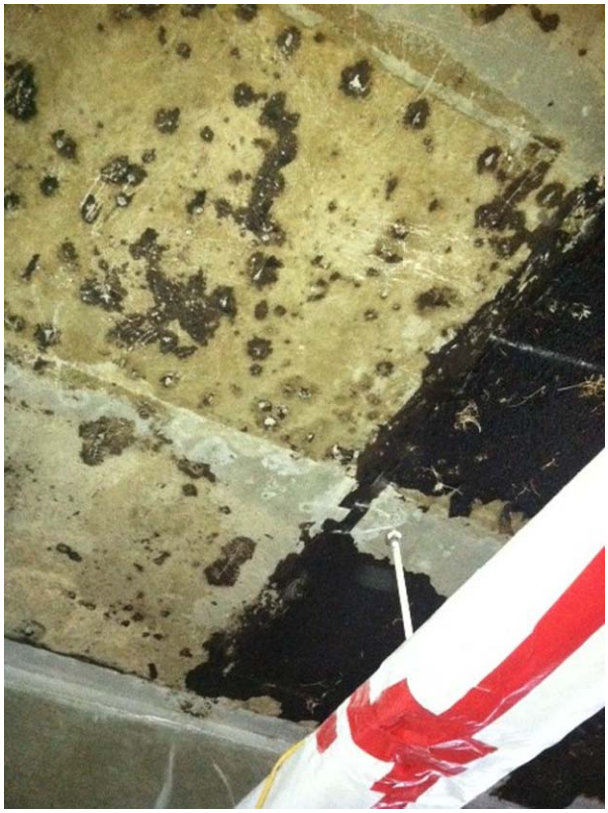


Figure C-17: PCB-containing mastic on cast-in-place concrete slabs, after removal of Tectum form plank. [*Photo courtesy of EnviroScience*]

Figure C-18: Typical concrete slab, coated with bridging encapsulant, where Tectum form plank and associated mastics were removed.

PCB Bulk Product Waste Remaining:

Some areas of Tectum form plank were not removed, including at stairways and exterior soffits at exterior doors [Figure C-19]. Tectum form plank was also not removed at the loading dock, storage area, custodial offices, portions of the kitchen area, and Lower Level storage room 153. Interior steel stud and plaster partitions were installed after installation of the Tectum form planks, and run full height to the underside of the Tectum; Tectum and mastic remain at the tops of nearly all these partitions [Figure C-20]. Ceiling mounted unit ventilators and other mechanical equipment were likewise installed directly underneath the Tectum form planks, and PCB Bulk Product Wastes remain at these locations [Figure C-21 and C-22]. Some areas of Tectum form plank also remain concealed above suspended ceilings. See Section G.3, below, for a complete description of remediation work remaining at Tectum form planks and associated mastics.

Figure C-19: Tectum form plank remaining at exterior and interior stairway / entrance ceilings.

Figure C-20: Tectum form plank remaining at the tops of typical partitions.

Figure C-21: Tectum form plank remaining above typical ceiling-mounted unit ventilators.

Figure C-22: Enlarged view of Tectum form plank above unit ventilators.

6. Interior caulk:

There are several locations at the building perimeter, typically at the Upper Level, where cast-in-place concrete columns are in close proximity to brick veneer piers. Concrete columns and brick also typically coincide at stairways where they intersect with corridors at the Lower and Upper Levels. PCB-containing caulk was used to fill the interior joints between these two materials. [Figure C-23]

Interior expansion joints in masonry walls to control the effect of building movement are not specifically indicated in the 1968 construction documents. They can be observed, however, at some locations in the reinforced brick masonry walls that form

the gymnasium and auditorium volumes at the center of the building [Figure C-24]. Caulk at these expansion / control joints was identified as PCB Bulk Product Material.

PCB-containing caulk was also identified at the joints between interior steel door / fixed lite frames and adjacent brick walls and concrete columns. This material is similar to that found at interior expansion / control joints and at joints between concrete and brick. [Figure C-25]

Figure C-23: Interior caulk at joint between cast-in-place concrete and brick.

Figure C-24: Red arrows indicate the locations of expansion / control joints in the reinforced brick masonry wall at the gymnasium.

Figure C-25: Interior caulk joints at steel door frames to brick (A), brick to concrete (B), and concrete to steel door frames (C). (Note: this is a post-remediation photo.)

2011 PCB Source Removal:

Interior caulk at concrete structures to brick [Figure C-26], at interior expansion and control joints in masonry, and at interior metal door / fixed lite frames to masonry [Figure C-27] was removed. The remaining surfaces were cleaned and encapsulated with two coats of an epoxy coating. The joints were resealed with new silicone caulk (and backer rods where necessary).

Figure C-26: Original interior caulk removed (and replaced) at joint between concrete column and brick pier.

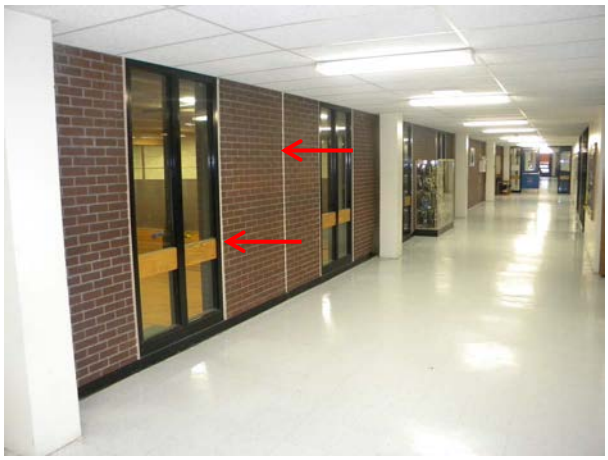


Figure C-27: Original interior caulk removed (and replaced) at expansion and control joints and at joints between steel frames and masonry.

PCB Bulk Product Waste Remaining:

Interior caulk was only removed where it was visible and accessible due to the short timeframe available to complete the 2011 PCB Source Removal Project. It is possible that PCB-contaminated caulk still remains at areas such as behind metal lockers, above suspended acoustical ceiling tiles, and behind gymnasium wall pads. See Section G.4, below.

7. Foam Filler Between Interior Concrete Columns / Beams and Interior Plaster Walls:

A foam filler found to contain PCBs may have served as a resilient joint to accommodate differential movement and to control cracking at plaster wall surfaces immediately adjacent to cast-in-place concrete columns and beams. The 1968 construction drawings typically called for a metal corner bead at such locations, and did not describe the foam filler observed and tested by EnviroScience. [Figure C-28]

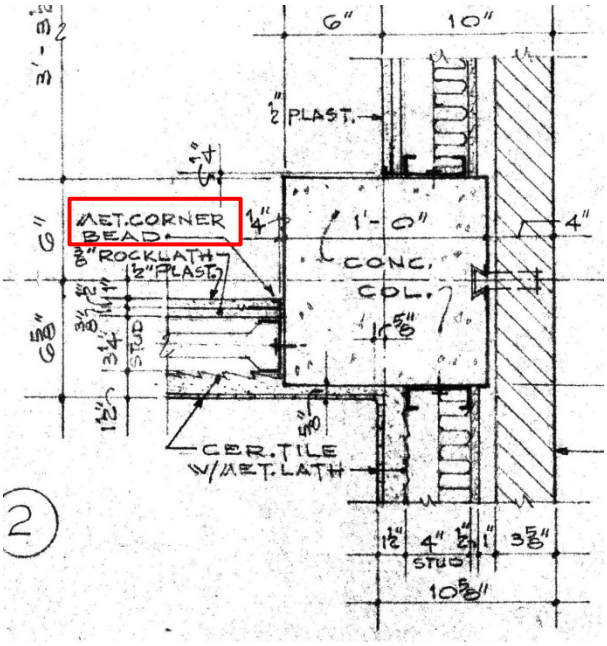


Figure C-28: Typical details of joints between concrete structure and steel stud / plaster partitions called for metal corner bead, and did not describe the foam filler observed and tested by EnviroScience. [*From 1968 Drawing A-19, Detail 2.*]

2011 PCB Source Removal:

PCB-containing foam filler was removed at joints between interior concrete structures and plaster walls. The remaining surfaces were cleaned and encapsulated with two coats of an epoxy coating. The joints were resealed with new caulk (and backer rods where necessary). [Figure C-29]

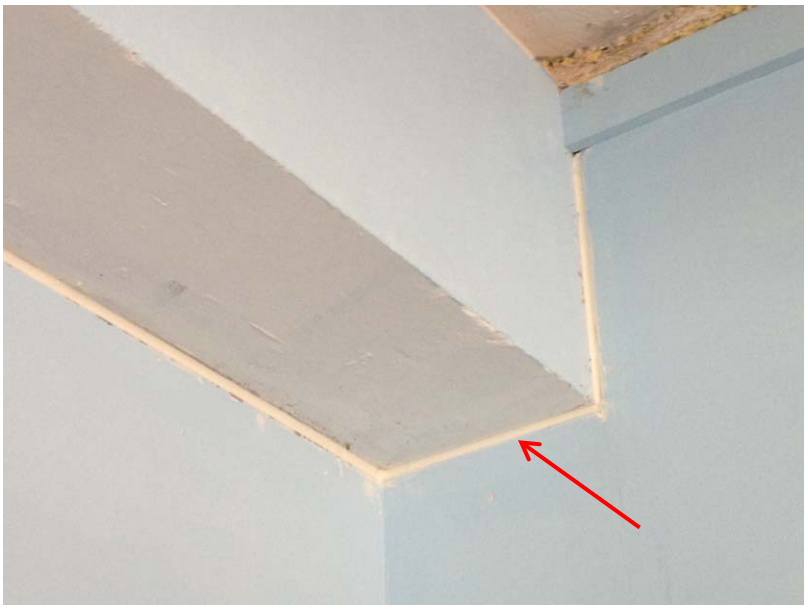


Figure C-29: Original foam filler removed at joints between concrete structure and plaster partitions. Joints cleaned out, encapsulated, and resealed with new caulk.

PCB Bulk Product Waste Remaining:

Interior foam filler was generally removed where it was visible and accessible. It is likely that PCB-containing foam filler still remains at areas such as behind metal lockers and above some suspended acoustical ceiling tiles that were not easily accessible. See Section G.5, below.

8. Interior Carpet:

Though not necessarily a Primary Source of PCBs, existing carpet inside the building was thought to have the potential to collect PCB-contaminated dust.

2011 PCB Source Removal:

Existing carpet and related mastics were removed in such areas as the Main Administration area at the Upper Level, in the Media Center and related spaces, and at the Teachers' Dining Room. New vinyl composition tile (VCT) flooring was installed at these locations.

PCB Bulk Product Waste Remaining:

Carpet was not removed in the auditorium, though it is not presently known if PCB concentrations in that space reached a level that would require remediation.

D. PCB REMEDIATION WASTES (PCB CONTAMINATED MATERIALS)

The identification of regulated Primary Sources of PCBs associated with the originally proposed window and door replacement project meant that a "determination of potential contamination as an evaluation of potential remediation wastes was required" at Westport Middle School (EnviroScience 2013, p. 12).

The transport of PCBs from primary sources to building materials and other indoor constituents in PCB contaminated buildings has been the subject of study by USEPA and others (EPA/600/R-11/156A). According to the USEPA, "a PCB sink is an indoor constituent that did not contain PCBs initially but later 'picked up' PCBs as a result of exposure to contaminated indoor air or as a result of direct contact with a primary source." PCB sinks are often referred to as "secondary sources" because the absorbed PCBs in contaminated materials can be re-emitted into the air when the primary sources are removed.

This Study will use the terms "PCB contaminated materials" and/or "PCB Remediation Wastes" to refer to building elements that were not originally formulated with PCBs but instead absorbed PCBs through direct contact or exposure to contaminated indoor air and/or dust.

PCB Remediation Wastes with PCB concentrations >1 ppm must be remediated at a "high occupancy" use building. Per EnviroScience (2013, page 15): "A 'high occupancy' use is defined by EPA in regulation 40 CFR Part 761.3… [as] any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is 840 hours or more (an average of 16.8 hours or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week) for PCB bulk remediation waste. Examples could include a residence, school, daycare center, sleeping quarters, a single or multiple occupancy 40 hours per week work station, a school classroom, a cafeteria in an industrial facility, a control room, and a work station at an assembly line." Westport Middle School, in its current use as a public school facility, would be classified as a "high occupancy" use building.

In June 2011, EnviroScience used a core drilling procedure to collect samples of building substrate materials that were adjacent to or in direct contact with PCB Bulk Product Waste associated with the originally proposed window and door replacement project. The following materials were sampled and tested:

1. Brick at Window and Door Jambs and Sills:

Exterior brick veneer at the perimeter of windows and doors immediately adjacent to exterior caulking known to be a Primary Source of PCBs was sampled at depths of 0" to 1/2" and 1/2" to 1". Tests indicated PCB concentration >1 ppm in brick at depths up to 1/2" to 1". Brick at interior caulk joints at exterior door frames was also found to have PCBs >1 ppm.

2. Exterior Concrete at Window and Door Heads:

Exterior cast-in-place concrete beams and/or slabs serving as headers above windows and exterior doors were sampled at a depth of 0" to 1/2" and were found to have PCB concentrations >1 ppm in several locations.

Figure D-01: Brick veneer at typical window jambs and cast-in-place concrete beams at typical window heads.

3. Exterior Concrete Walkways:

EnviroScience sampled concrete at an exterior sidewalk outside an exterior door (Door No. 100, near Room 166) to a depth of 0" to 1/2" and measured PCB concentrations >1 ppm.

4. Exterior Soils:

EnviroScience collected samples of exterior soils at the perimeter of the building. Samples at the "drip line" (i.e. – in line with the outermost vertical face of exterior walls) taken at a depth of 0" to 1/2" indicated PCB concentrations >1 ppm at several locations. Samples 4" deep at the drip line, as well as 0" to 1/2" deep at a distance 5'-0" outward from the drip line, were held in reserve for possible future analysis.

In addition to the materials sampled and tested above – which were typically located at the building exterior – EnviroScience determined in 2011 that a number of related materials at the building interior also contained >1 ppm PCBs and were therefore classified as PCB Remediation Wastes. These materials include:

5. Brick at Interior Jambs and Sills Adjacent to Window Systems

Brick veneer is the interior finished material at the jambs and sills of Type B windows. [Figure D-02]

6. Concrete at Interior Columns and Beams Adjacent to Window Systems:

Exterior aluminum window frames themselves typically do not come in direct contact with interior concrete columns. However, PCB-containing caulk was used at vertical joints between concrete columns and brick piers that occur at Type B windows [see Figure C-23 above].

7. Brick at Interior Expansion and Control Joints

This is understood to include brick on either side of expansion / control joints at existing reinforced brick masonry walls at the perimeter of Gymnasium and Auditorium spaces as well as brick adjacent to caulked steel door and fixed lite frames. [Figure D-03]

Figure D-02: Interior brick at typical window jambs and sills, and interior concrete at brick piers.

Figure D-03: Interior brick adjacent to expansion / control joints and fixed lite frames.

All of the PCB Remediation Wastes (PCB contaminated materials) listed above (numbers 1 through 7) were identified by EnviroScience in the course of investigating and administering the 2011 PCB Source Removal Project. These PCB contaminated materials were generally not removed as part of the 2011 project and currently remain in place.

After the 2011 PCB Source Removal Project, EnviroScience continued to evaluate potential PCB Bulk Product Materials and PCB Remediation Wastes. Sampling and testing conducted in 2012 revealed the following additional materials contaminated with PCBs:

8. Interior Glazing Compound at Fixed Lite Window Walls:

Steel-framed fixed lite interior sidelights and window walls are common throughout the building. These glass walls form partitions between related spaces and help the spread of daylight. Window walls are especially prevalent in the Main Administration area and in the Media Center. The glazing compound that helps seal the glass to the steel frame was found to contain PCBs in concentrations >1 ppm but <50 ppm.

Figure D-04: Interior glazing compound at fixed lite sidelights and window walls.

9. Painted Surfaces:

USEPA's research has shown that some kinds of paint can absorb high concentrations of PCBs. Painted surfaces at Westport Middle School include plaster walls and steel doors and frames. Paint within the building registered PCB concentrations from >1 ppm to >50 ppm.

10. Bare Concrete Columns, Beams, and Ceilings:

Bare concrete at columns and ceilings above suspended acoustical ceiling tiles in the Main Administration area were found to be contaminated with PCBs at >1 ppm.

This suggests that (1) typical cast-in-place concrete columns and beams likely absorbed PCBs through the air (or dust) and (2) even cast-in-place concrete floor and roof slabs constructed without the Tectum form planks (associated with mastics that are a known Primary Source of PCBs) are contaminated.

Figure D-05: Bare concrete slab without Tectum form plank above suspended ceiling areas.

11. Tectum Acoustical Ceiling Panels:

Tectum ceiling panels installed in a suspended metal grid are common to the building corridors as well as the Main Administration area, portions of the locker rooms, and portions of the Media Center. These ceiling tiles were tested and found to contain PCBs at >1 ppm. The absence of any identifiable mastic or coating at these tiles suggests that they were contaminated by PCBs in the air (or dust) over time.

Figure D-06: Tectum acoustical ceiling panels at typical corridor.

12. Miscellaneous Interior Caulk:

EnviroScience tested some miscellaneous interior caulk, such as at air conditioner sleeves through window openings. Some caulk was clearly less than ten years old, and therefore could not be PCB Bulk Product Materials, yet PCB concentrations >50 ppm were found at some locations.

13. Resilient Base Mastic:

Mastic used to adhere resilient (vinyl or rubber) base to wall surfaces was found to contain PCBs >50 ppm. It is not clear whether this mastic is PCB Bulk Product Material or a contaminated PCB Remediation Waste.

Figure D-07: Resilient base mastic.

As noted at the beginning of this section, USEPA and others have studied how common interior building materials can act as PCB sinks, basically absorbing PCBs through the air or dust or as a result of direct contact with Primary Sources of PCBs. Different materials absorb PCBs in different concentrations. [Figure D-08]

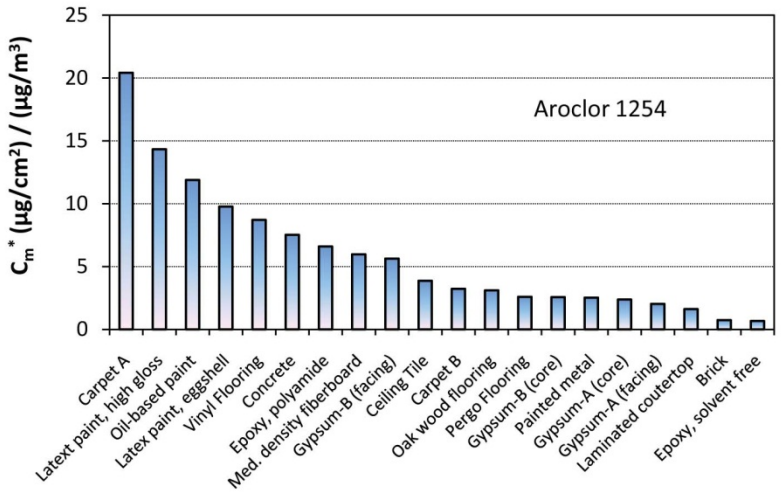


Figure D-08: Tested normalized sorption concentrations for Aroclor 1254 (a common formulation of PCBs) in 20 building materials. [*From EPA/600/R-11/156A*]

Although no further materials were tested by EnviroScience, research by USEPA and others appears to indicate that practically any porous building material could act as a PCB sink and therefore become contaminated with PCBs. Other possible contaminated porous materials at Westport Middle School not yet sampled and tested include but are not limited to:

14. Cast-in-Place Concrete Ceilings at Removed Tectum Form Plank:

Where bare concrete was found to be contaminated with PCBs >1 ppm (see D.10, above), it stands to reason that the cast-in-place concrete ceilings that were in direct contact with PCB-containing mastics associated with Tectum form plank may also be contaminated.

15. Interior Brick Walls:

USEPA researchers found brick to be a relatively weak sink. Exposed interior brick walls are common at corridors and in areas such as Main Administration, media center, and cafeteria. Brick walls are also found within the gymnasium and the auditorium, but it is not known if PCB Bulk Product Wastes were present in quantities or concentrations high enough to result in contamination of the brick in those spaces.

16. Plywood Fascia and Soffits

Plywood fascias commonly serve as a transition between higher ceilings originally finished with exposed Tectum form plank and lower ceilings with suspended acoustical tiles. They are also found at soffits above folding partitions and above several steel-framed door and fixed lite assemblies. [Figure D-09]

17. Folding Partitions

Approximately five movable folding partitions are in place to separate some classroom spaces. [Figure D-10]

Figure D-09: Plywood fascia at cafeteria.

Figure D-10: Folding partition between classrooms.

18. Wood Rails and Trim

Stained wood is used as hand rails and guard rails at stairways. Wood is also used as a guard at fixed lite assemblies, as a protective barrier at finned tube radiators, and as interior trim at Type 'A' and 'A1' windows. [Figure D-11]

19. Wood Floors:

USEPA researchers measured PCB sorption in oak wood flooring (see Figure D-08, above). Wood floors currently exist at the Lower Level in rooms 101 through 107. Wood flooring also occurs in the gymnasium, but it is not known if PCB Bulk Product Wastes were present in quantities or concentrations high enough to result in contamination of the wood in that space. [Figure D-12]

Figure D-11: Wood guard rail at fixed lite assembly.

Figure D-12: Wood floor at Classroom 107.

20. Resilient Floors and Base:

USEPA researchers likewise identified vinyl flooring (one of several types of resilient flooring material) as a PCB sink material. Resilient floors and base are common in all areas of the school.

21. Chalkboards, Tack Boards, and White Boards

Visual display boards are prevalent at classrooms throughout the building. Many original chalk boards have been covered with newer dry-erase white boards. [Figure D-13]

22. Built-in Cabinets:

Both wood and laminate materials were identified by USEPA researchers as PCB sinks. [Figure D-14]

Figure D-13: Original chalk board in classroom.

Figure D-14: Built-in cabinet in (science) classroom.

23. Painted Lockers

Metal lockers are typically factory-painted. It is not known whether factory paint is susceptible to contamination with PCBs. There is evidence to suggest that many of the lockers at Westport Middle School were field painted at some point after their initial installation.

24. Plaster Walls:

Virtually all exposed plaster wall surfaces in the building are painted. While paint was identified by EnviroScience in 2012 as a PCB contaminated material, it is not currently known if the plaster under the paint layer(s) is contaminated. Plaster surfaces concealed above suspended acoustical ceilings would typically not have been painted, and it is possible that such bare plaster may have absorbed PCBs similar to the bare concrete identified above (see D.10).

E. CURRENT CONDITIONS AND RESTRICTIONS

The current condition at Westport Middle School, wherein most, but not all, PCB Bulk Product materials (i.e. – Primary Sources of PCBs) have been removed and PCB Remediation Wastes (i.e. – contaminated materials) remain in place, requires on-going management and sampling. It is anticipated that indoor air samples will need to be taken throughout the building until such time as all remaining PCB Bulk Products are removed and additional remediation to remove PCB Remediation Wastes is conducted. Monitoring of ceiling encapsulation is also required, consisting of visual observations to determine if there are any noticeable breaches in the integrity of the coating, as well as surface wipe samples to verify containment of PCBs.

EnviroScience prepared an Operations and Maintenance (O&M) Plan for the school based on the work completed during the PCB Source Removal Project of 2011. The general intent and purpose of the O&M program is to ensure continued health and safety of building occupants as well as maintenance staff and outside contractors who may come into contact with PCB containing materials. In order to provide this assurance, the following procedures must be implemented:

1. Establish procedures to recognize, control, and mitigate potential PCB hazards and inadvertent disturbance of PCBs.
2. Ensure worker safety in accordance with occupational safety and health regulations pertaining to PCBs.
3. Establish a process for review of proposed maintenance activities and/or work of outside contractors or vendors to determine the potential of the work to disturb PCBs.
4. Identify general work practices where contact with PCB materials or potential PCB contaminated dust or debris may be present.
5. Establish goals to maintain indoor air and dust concentrations for PCBs in accordance with health standards for continued occupancy.
6. Maintain proper ventilation systems within the building.
7. Identify procedures for reporting observances of conditions where PCB materials have become disturbed and special response procedures.
8. Identify testing schedules and frequency for verifying indoor air and dust concentrations within the building.
9. Identify training of maintenance staff and awareness of the public through outreach activities and reporting.
10. Ensure any future planned renovations or other possible disturbances of PCBs are properly designed and conducted by appropriately trained contractors with workers experienced in the handling of PCBs.

EnviroScience recommended that the PCB control program include appointment of a PCB Coordinator and a PCB Consultant, as well as a PCB Remediation Contractor that can be on call to handle emergency response actions.

Although Westport Middle School has been occupied within USEPA's guidelines since the 2011 PCB Source Removal Project, the building and site are under a use restriction that affects the Town's ability to sell or transfer the property. Additionally, USEPA considers the current status of the building to be a temporary condition. USEPA may, at its discretion, require action to address remaining PCB Bulk Products and PCB Remediation Wastes or otherwise modify the occupancy of the building. The status quo at Westport Middle School is not sustainable.

F. ALTERNATIVES FOR ON-GOING USE OF WESTPORT MIDDLE SCHOOL

PCB Bulk Products (Primary Source materials) and PCB Remediation Wastes (contaminated materials) currently remain at Westport Middle School. Their presence within the building and grounds can lead to on-going concerns over health safety, requires continuing monitoring and sampling, and complicates maintenance and renovation activities.

There are generally two basic options for the on-going use of the Westport Middle School building as a middle school facility: Option 1 involves removal of all PCB Bulk Products and removal of all PCB Remediation Wastes; Option 2 involves removal of all PCB Bulk Products and encapsulation of PCB Remediation Wastes.

[There are several other alternatives should the Town of Westport decide to discontinue use of the building as a middle school facility. One alternative would be to change the use and/or occupancy of the building to a category that would allow for higher concentrations of PCBs, thus potentially reducing some of the remediation requirements. Another would be to demolish the structure in its entirety. This Feasibility Study for the On-Going Use of Westport Middle School does not explore these non-education use alternatives in detail.]

Option 1: Removal of All PCB Bulk Products and PCB Remediation Wastes

In order to lift building use restrictions and eliminate the requirement for on-going PCB management and sampling, it is likely that all PCBs, both Primary Sources (> 50 ppm) and PCB contaminated materials (> 1 ppm), must be removed from the site. This option might eliminate the need for on-going oversight by USEPA; should eliminate the burden and expense of on-going management, monitoring, sampling, and testing; and might temper perceptions of on-going health safety concerns.

As will be shown later in this Study, however, the effort to remove all PCB Remediation Wastes, which are very likely present in areas and materials throughout the building interior, may prove to be physically impracticable and/or financially infeasible.

Option 2: Removal of All PCB Bulk Products and Encapsulation of PCB Remediation Wastes

In order to satisfy USEPA, any option for the continuing use of Westport Middle School as a middle school facility must include removal of all Primary Sources of PCBs. Unlike Option 1, however, Option 2 mostly leaves interior PCB contaminated materials in place and encapsulates them in accordance with USEPA guidelines. This option does not eliminate site use restrictions, USEPA oversight, or the need for on-going management of PCBs. It

does, however, result in an interior environment where contact with and emissions from PCB Remediation Wastes can be significantly controlled and substantially reduced.

Encapsulants are intended to serve two purposes: they prevent direct contact with PCB contaminated materials, and they reduce the release of potential dust to the environment. Epoxy coatings perform both functions, as could an airtight enclosure or hard, sealed barrier. The emission of PCBs from contaminated materials to the air is less understood, but evidence suggests that encapsulants such as epoxy coatings do reduce airborne PCBs.

Encapsulated PCB Remediation Wastes must be monitored through visual inspection and wipe sampling.

Where removal of PCB Remediation Wastes is physically impracticable or financially infeasible, encapsulation may be a valid alternative.

The following sections describe possible work required to remove remaining PCB Bulk Products and to remove or encapsulate PCB Remediation Wastes.

G. REMOVAL OF REMAINING PCB BULK PRODUCTS

1. Exterior Doors - Exterior and Interior Caulk:

Exterior and interior PCB-containing caulk (and associated backer rods) must still be removed at all exterior doors at a height of around 8'-0" and above. (PCB-containing caulk was removed below door height during the 2011 PCB Source Removal Project.) This removal work can be performed with the existing doors, glazing, and frames in place. After cleaning out the joint, new backer rod and sealant should be installed at both exterior and interior joints.

a. There are five sets of **two-story height exterior door assemblies** (Doors Nos. 19, 30, 58, 81, & 100) [Figure G-02] exiting to grade from an intermediate level a few steps above the Lower Level.
   i. Quantity: Remove, and subsequently replace, caulk at 5 exterior door assemblies x (28.5 LF exterior caulk + 28.5 LF interior caulk each) = approximately 285 LF total.

b. There are two sets of **one-story exterior door assemblies** (Doors Nos. 52 & 75) [Figure G-03] exiting directly to grade from the Lower Level of the building. Interior suspended ceiling tiles at the one-story door assemblies must be removed and reinstalled to remove interior caulk.
   i. Quantity: Remove, and subsequently replace, caulk at 2 exterior door assemblies x (14.5 LF exterior caulk + 14.5 LF interior caulk each) = approximately 58 LF total.

Figure G-01: Exterior PCB-containing caulk at door assemblies above 8'-0".

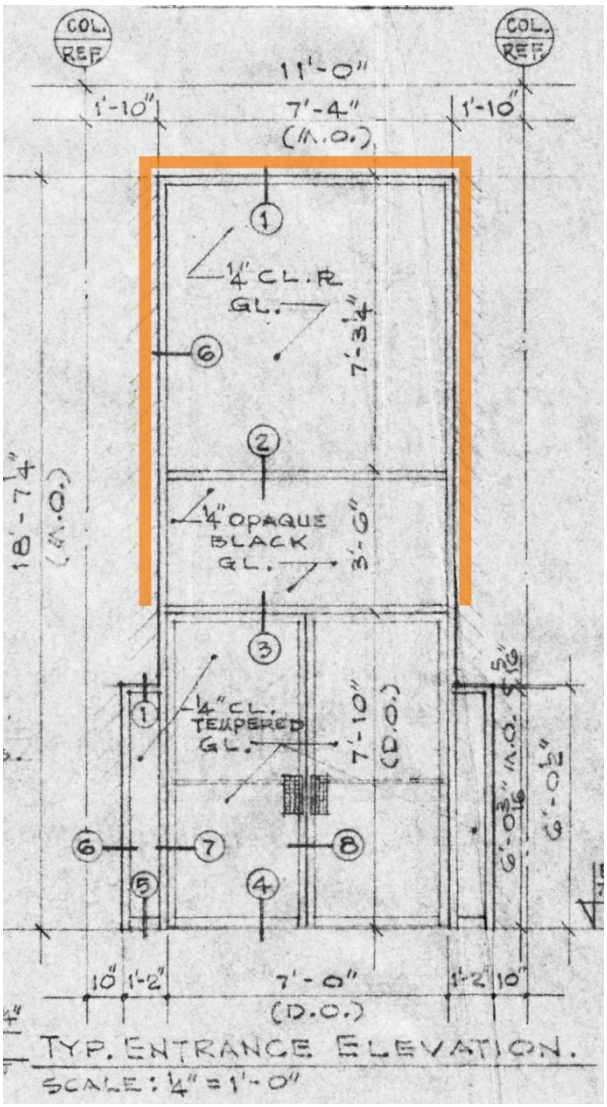


Figure G-02: Typical two-story exterior door assembly elevation. Orange lines indicate locations of exterior and interior caulk to be removed and replaced.

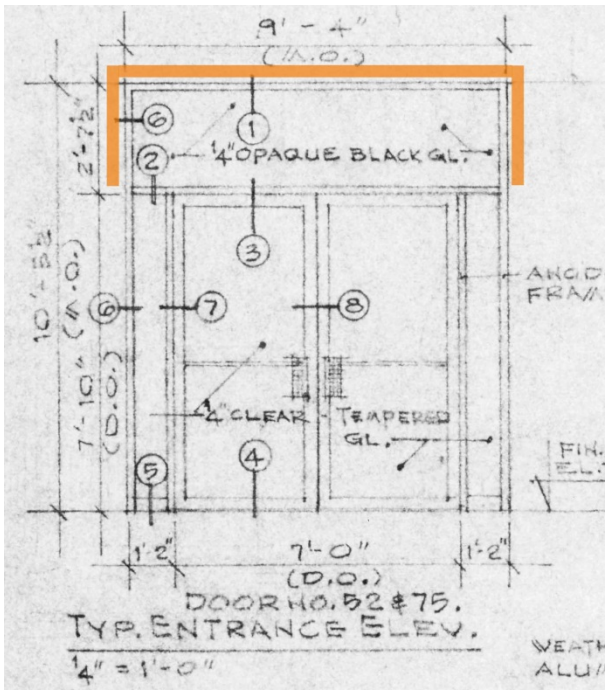


Figure G-03: Typical one-story exterior door assembly elevation. Orange lines indicate locations of exterior and interior caulk to be removed and replaced.

c. There is also one **aluminum-framed glazed storefront assembly** (including Door No. 205) exiting from the receiving area at the Upper Level [Figures G-04 and G-05], with brick at the jambs and a plywood soffit assembly at the head. It is presumed that all perimeter caulk joints at the receiving area storefront (including at the soffit assembly) contain PCBs and must be removed, and that interior suspended ceiling tiles must be removed and reinstalled to remove interior caulk.

i. Quantity: Remove, and subsequently replace, caulk at 1 storefront assembly x (76 LF exterior caulk + 76 LF interior caulk) = approximately 152 LF total.

Figure G-04: Loading dock and receiving area.

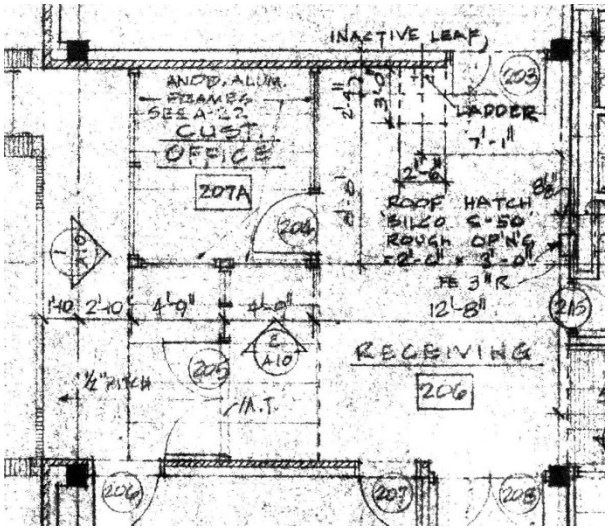


Figure G-05: Plan at loading dock and receiving area, showing storefront assembly forming Room 207A and exterior door no. 205. [*From 1968 Drawing A-10.*]

[See Large Format Drawing 1, Exterior Elevations, for locations of exterior door assemblies.]

2. Exterior Windows - Interior Glazing Compound:

Glazing compound at the interior of all exterior metal windows contains PCBs and must be removed. Removal of the glazing compound is not practicable without also removing both the glass as well as the fixed and operable metal frames and sashes supporting the glass. Essentially, the entire existing window system must be removed to its rough / masonry opening.

Removed window systems should be replaced with new window systems, such as a 4.5" deep thermally-broken architectural grade aluminum window system with 1" thick insulated low E glass, in sizes, configurations, and operation (fixed and hopper) similar to the existing.

There are two basic types of existing windows at Westport Middle School:

a. **Type 'A/A1' windows** [Figure G-06] are of fixed over hopper configuration and are usually situated alone or in pairs in individual punched masonry openings. They are common at classrooms throughout the Lower and Upper Levels.
   i. Quantity: Remove, and subsequently replace, 144 Type 'A/A1' windows x 18 SF each = approximately 2,592 SF total.

b. **Type 'B' windows** [Figure G-07] are of fixed over hopper over fixed configuration and are usually arranged in long banks with brick piers separating individual masonry openings. Type B windows are located at the Main Administration area, the Media Center, the Cafeteria, the Art Room, and some classrooms, all at the Upper Level.
   i. Quantity: Remove, and subsequently replace, 95 Type 'B' windows x 34 SF each = approximately 3,230 SF total.

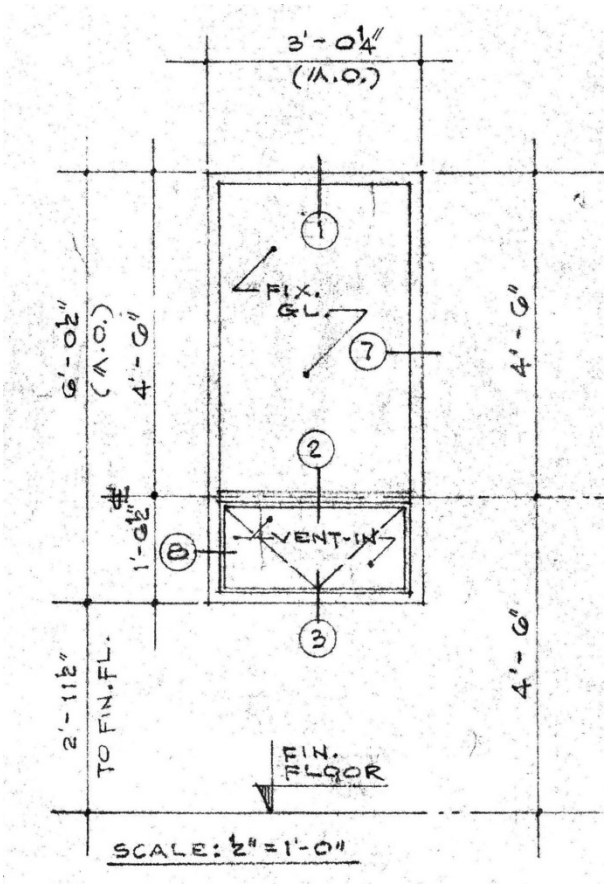


Figure G-06: Elevation of typical Type 'A/A1' window. [*From 1968 Drawing A-20.*]

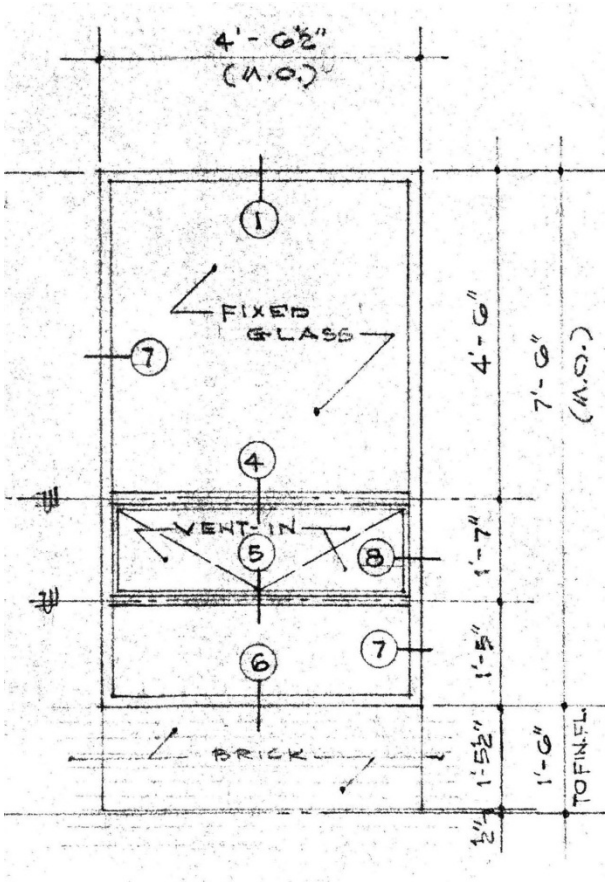


Figure G-07: Elevation of typical Type 'B' window. [*From 1968 Drawing A-20.*]

c. Removal and replacement of the existing window systems should include the **interior wood and Corian trim** that surrounds typical Type 'A/A1' windows [Figure G-08]. The extent of possible contamination of this interior trim by PCBs, and its possible designation as PCB Remediation Waste, is presently unknown.

i. Quantity: Remove, and subsequently replace, interior wood trim (+/- 8.25" deep) and blocking at 144 Type 'A/A1' windows x 15 LF each = approximately 2,160 LF total.

ii. Quantity: Remove, and subsequently replace, interior Corian stools (+/- 8.25" deep) at 144 Type 'A/A1' windows x 3 LF each = approximately 432 LF total.

Figure G-08: Interior wood trim and Corian stools at typical Type 'A/A1' windows.

[See Large Format Drawing 1, Exterior Elevations, for locations of Window Types 'A/A1' and 'B'.]

3. Mastic Above Tectum Form Plank:

Existing Tectum form plank material with PCB-containing mastics must still be removed at a number of locations throughout the building. [See Large Format Drawings 2A and 2B for locations of remaining Tectum form plank removal.]

Main Stairways

a. Tectum form plank comprising part of the ceiling/roof assembly must be removed at the **five main stairways** located around the building perimeter. This form plank is continuous from the interior corridor out to the exterior soffit that shields the entrance landing. It bridges, and must be removed from above, the plywood fascia assembly at the Upper Level corridor door as well as the two-story aluminum-framed egress assembly noted in Section G.1

above. Tectum form plank extends beyond the face of the brick veneer that forms the walls of the stairway, particularly where the wall steps in 1'-0" at the transition from interior to exterior. It is likely that several courses of brick veneer will need to be removed and replaced in order to access all of the Tectum form plank at stairway ceilings. Following removal of the form plank, the PCB- (and asbestos-) containing mastics must be scraped and removed, and the remaining bare concrete ceiling must be encapsulated. Some new finish material (possibly replacement brick) would also be required to fill the gap at the top of the walls left as a result of the removal of the Tectum.

i. Quantity: Remove, and subsequently encapsulate, Tectum ceilings at 5 stairways x 300 SF of ceiling area each = approximately 1,500 SF of form plank and mastic removal total.

ii. Quantity: Remove, and subsequently replace, brick veneer at 5 stairways x 3 courses x 33 LF (average) of veneer brick side wall x 2 walls each = approximately 330 LF total.

Figure G-09: Tectum form plank remaining at interior and exterior ceiling at stairways. Red arrow indicates 1'-0" step in brick veneer wall above which form plank extends.

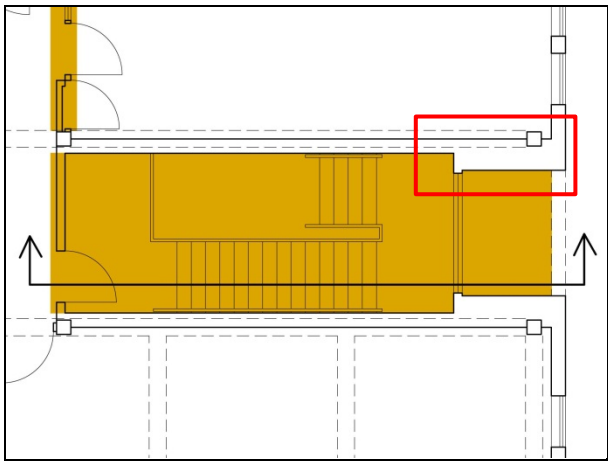


Figure G-10: Typical Upper Level plan at stairway. Red box indicates area of enlarged plan shown in Figure G-12, below.

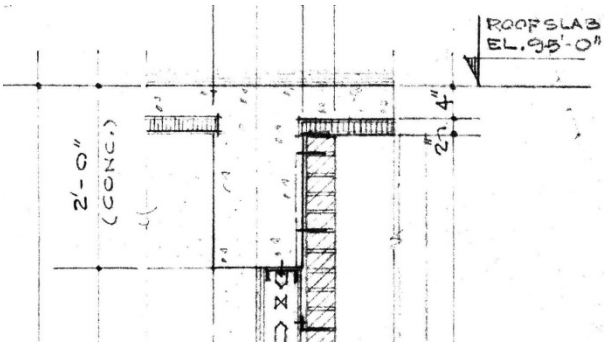


Figure G-11: Section detail at top of interior brick veneer wall at stairway, showing Tectum form plank extending beyond the face of the brick. [*From 1968 Drawing A-24, Section 2.*]

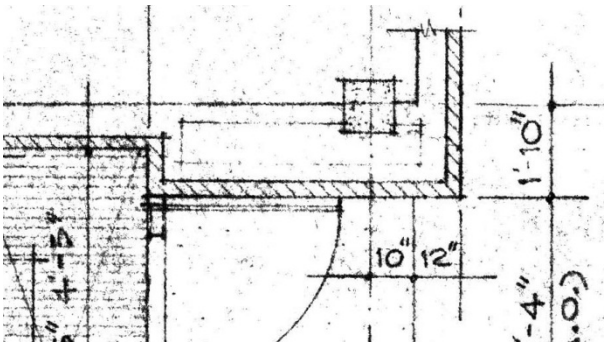


Figure G-12: Enlarged plan at step in brick veneer wall at typical entrance / stairway. [*From 1968 Drawing A-23.*]

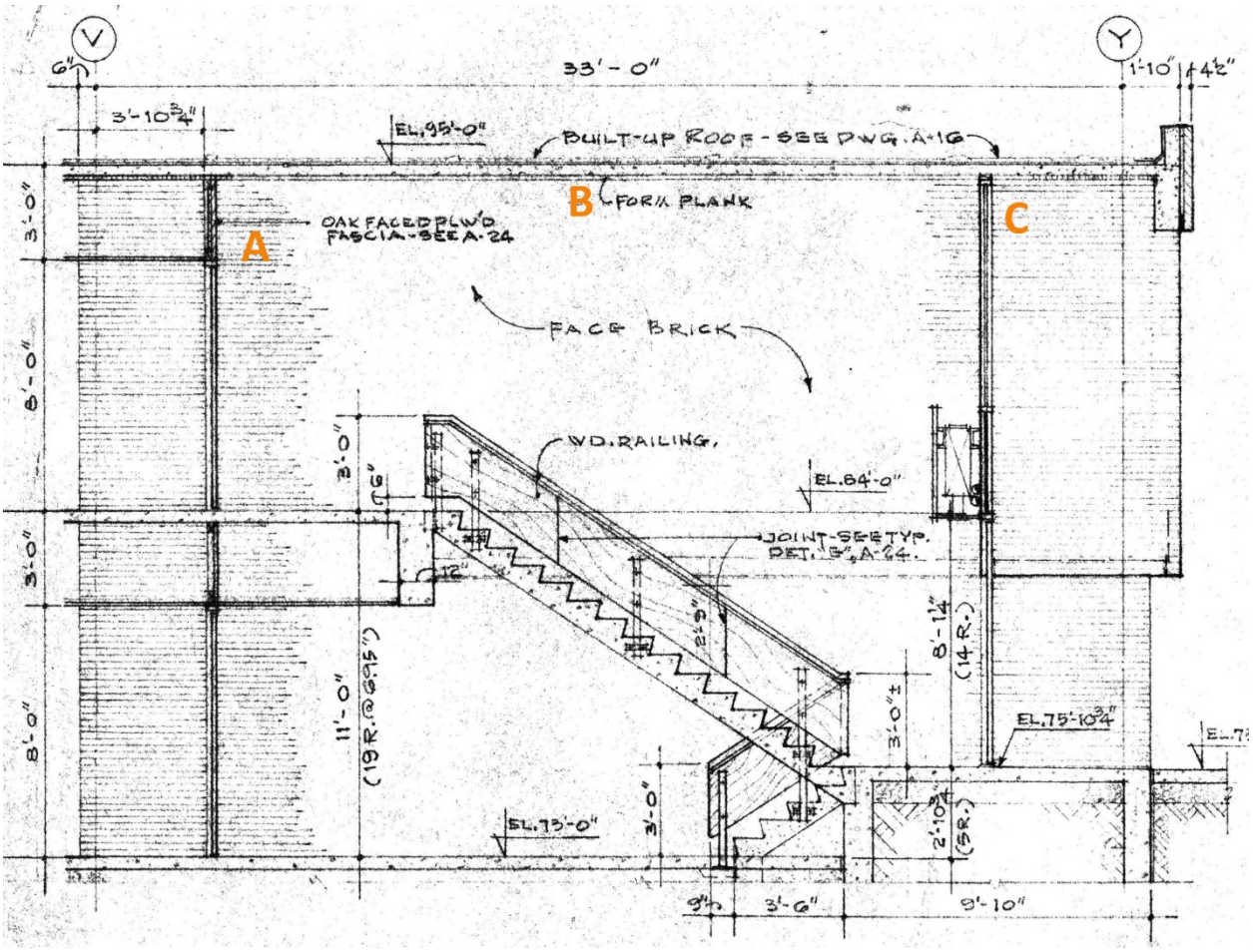


Figure G-13: Section through typical stairway. A = plywood fascia above door to corridor; B = Tectum form plank; C = exterior entrance assembly. [*From 1968 Drawing A-23, Section 'A-A'.*]

Custodial and Receiving Area

b. Tectum form plank and associated PCB-containing mastics must be removed in the vicinity of the **loading dock, storage area, custodial offices, and receiving area** at the southwest corner of the Upper Level. Tectum form plank is exposed to view and accessible at most of these spaces. An existing suspended ceiling must be removed and replaced in order to remove Tectum form plank at a portion of the receiving area and within the adjacent glass-enclosed office space. Following removal of the form plank, the PCB- (and asbestos-) containing mastics must be scraped and removed, and the remaining bare concrete ceiling must be encapsulated.

i. Quantity: Remove Tectum form plank and subsequently encapsulate exposed concrete ceiling = approximately 1,600 SF total.

ii. Quantity: Remove, and subsequently replace, suspended ceiling system = approximately 230 SF total.

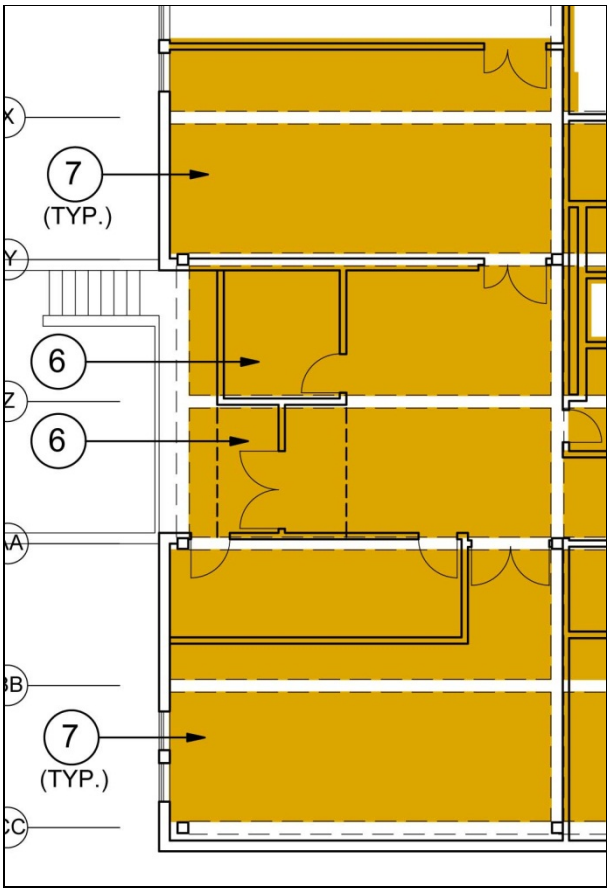


Figure G-14: Plan of receiving and custodial area. Areas in orange indicate existing Tectum form plank to be removed. 6 = areas of form plank to be removed above existing suspended ceilings; 7 = areas of existing exposed form plank.

Kitchen Area

c. Tectum form plank remains and must be removed from some **locations in the kitchen area**. A suspended ceiling and soffit feature that defines the serving area has Tectum form plank above a portion of it. Ancillary toilet and storage rooms adjacent to the main kitchen also have Tectum form plank concealed above suspended ceilings. These suspended ceilings would need to be removed (and subsequently re-built, if desired) in order to eliminate the remaining Tectum. A soffit in the Teacher Dining Room has Tectum form plank concealed above it. Built-in refrigerators and freezers in the kitchen area might have to be removed and reinstalled in order to access the Tectum form plank concealed above. (Actual quantities and conditions of remaining concealed Tectum form plank cannot be accurately determined without removal of existing finishes and equipment.) Following removal of the form plank, the PCB- (and asbestos-) containing mastics must be scraped and removed, and the remaining bare concrete ceiling must be encapsulated.

   i. Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at serving area = approximately 300 SF total.

   ii. Quantity: Remove Tectum form plank above plaster soffit, and subsequently encapsulate concrete, at Teacher Dining = approximately 100 SF total.

   iii. Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at ancillary areas = approximately 500 SF total.

   iv. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above refrigerators and freezers = approximately 100 SF total.

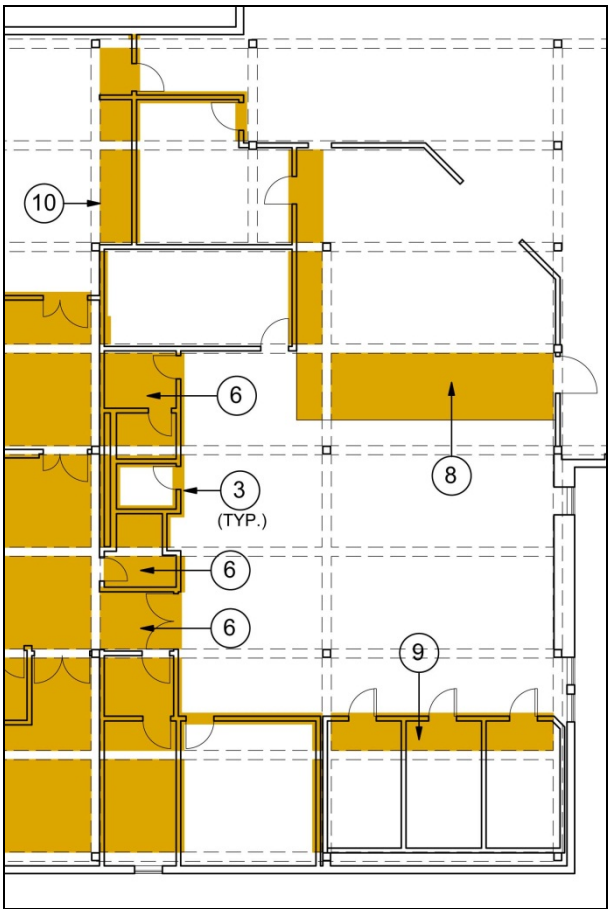


Figure G-15: Plan of kitchen area. Areas in orange indicate existing Tectum form plank to be removed. 3 = form plank to be removed from above partitions; 6 = areas of form plank to be removed above existing suspended ceilings at ancillary spaces; 8 = areas of form plank to be removed above existing soffit / suspended ceiling at serving area; 9 = areas of form plank to be removed above refrigerators and freezers; 10 = form plank to be removed from above soffit at Teacher Dining.

Figure G-16: Soffit and suspended ceiling above serving area in kitchen.

Figure G-17: Tectum form plank above built-in refrigerators and freezers.

Storage Room 153

d. Tectum form plank was not removed from within Lower Level Storage Room 153 during the 2011 project. The presence of existing mechanical equipment and ductwork in this space complicates Tectum and mastic removal.

i. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, at Storage Room 153 = approximately 450 SF total.

Figure G-18: Tectum form plank at Storage Room 153.

Tops of Partitions

e. Typical interior steel stud and plaster partitions were built directly to the underside of the Tectum form plank throughout the building. Tectum and mastic at the **tops of** these **partitions** must be removed. To do so, existing wood trim at the top of the wall should be removed, exposing the wall framing and blocking. Existing wood nailers are anchored through the Tectum form planks into the concrete floor or roof slab above. Removal of the Tectum might result in disconnecting the nailer anchorage, so the work should proceed in alternating 4'-0" segments in order to maintain the necessary top of wall anchorage. (Temporary bracing might also be employed.) Following removal of the Tectum and mastic and the encapsulation of the remaining concrete slab surfaces, the resulting 2" gap above the existing wood nailers should be filled with new wood blocking anchored to the concrete slab, and the existing wood nailers should then be anchored to this new blocking to ensure a well braced partition. New wood trim can be installed as a finish material at the tops of these partitions. Some areas of remaining Tectum form plank yet to be removed were also found above masonry walls in the Band Room.

i. Quantity: Remove Tectum form plank, and subsequently provide new wood blocking and trim, above existing partitions = approximately 2,425 linear feet total.

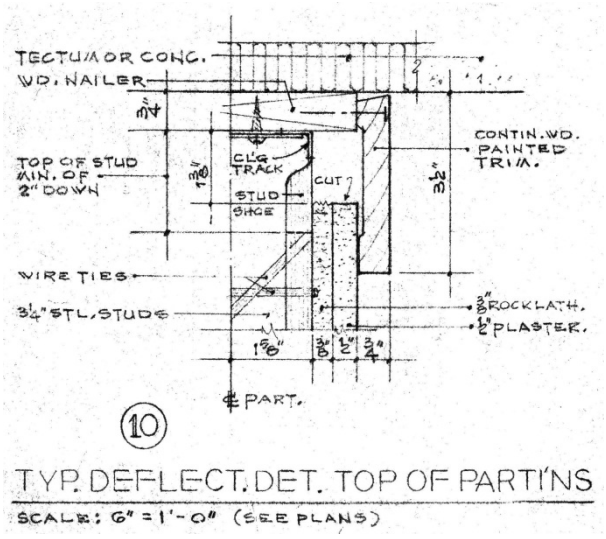


Figure G-19: Typical detail at top of partitions to existing Tectum form plank. [*From 1968 Drawing A-26, Detail 10.*]

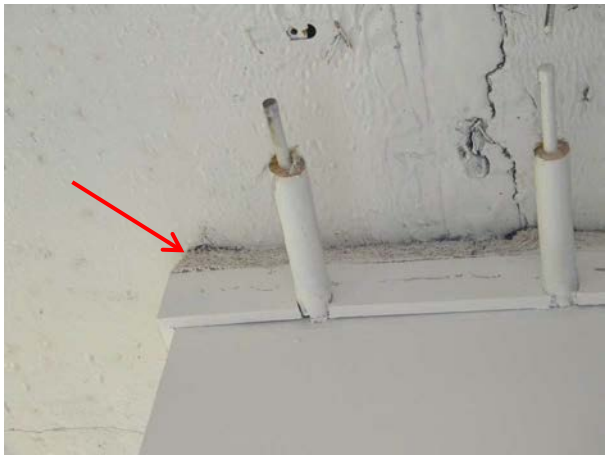


Figure G-20: Approximately 2" thickness of Tectum form plank remaining at top of typical partitions following the 2011 PCB Source Removal Project.

Figure G-21: Tectum form plank remaining at the tops of masonry partitions at the Band Room.

Above Mechanical Equipment

f. Many **ceiling-mounted unit ventilators and other heating and ventilating equipment** at the Lower Level were installed directly to the underside of the Tectum form plank ceilings. In order to remove the remaining Tectum form plank, scrape off the associated mastic, and encapsulate the exposed concrete ceilings, the mechanical equipment must be

removed and subsequently reinstalled. This would require disconnecting and reconnecting ductwork and exterior air openings, power and control wiring, and supply and return piping. Most unit ventilators at classrooms [Figure G-23] involve negligible quantities of associated ductwork. Some interior spaces near the gymnasium [Figure G-24] and in a Special Education classroom area [Figure G-25] require the removal and reinstallation of more extensive amounts of ductwork.

i. Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at 24 classroom unit vents x 22 SF (average) each = approximately 528 SF total.

ii. Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at mechanical equipment and ductwork at 6 other miscellaneous interior locations = approximately 600 SF total.

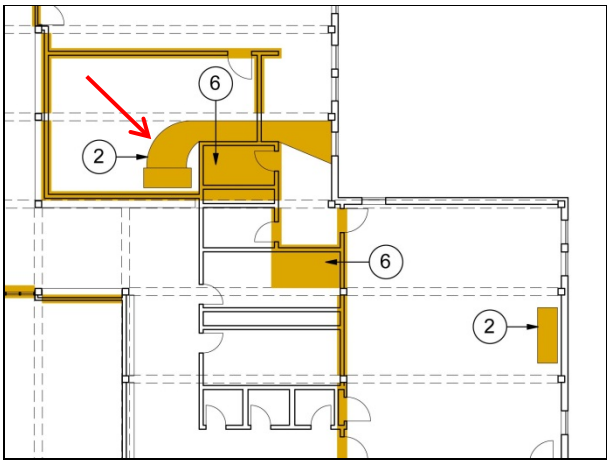


Figure G-22: Partial plan showing locations of Tectum form plank above mechanical equipment (Note 2). Red arrow indicates mechanical equipment and ductwork pictured in Figure G-25, below.

Figure G-23: Typical classroom unit ventilator with Tectum form plank above.

Figure G-24: Tectum form plank above mechanical equipment and ductwork in Gymnasium Storage Room 141.

Figure G-25: Tectum form plank above mechanical equipment and ductwork in Special Education Room 155.

Above Ceiling Mounted Soffits

g. Several areas of the building were constructed with movable (folding) partitions to allow flexibility in arranging classroom spaces. These movable partition assemblies include **ceiling mounted soffits** that conceal existing Tectum form plank above. Eight soffit assemblies, and the five movable partitions they accommodate, must be removed in order to remove the remaining Tectum form plank, scrape off the associated mastic, and encapsulate the exposed concrete ceilings. Three of the movable partitions currently serve as permanent walls between classrooms and should be replaced with new full height steel stud, blue board, and plaster walls.

   i. Quantity: Remove 5 movable partition assemblies = approximately 1,500 SF total.

   ii. Quantity: Remove soffit assemblies and Tectum form plank, and subsequently encapsulate concrete, at 8 soffit assemblies = approximately 1,100 SF total.

   iii. Quantity: Provide 137 LF new partitions (double-sided) x 11'-0" height = approximately 1,500 SF total.

Figure G-26: Typical soffit construction above movable partitions.

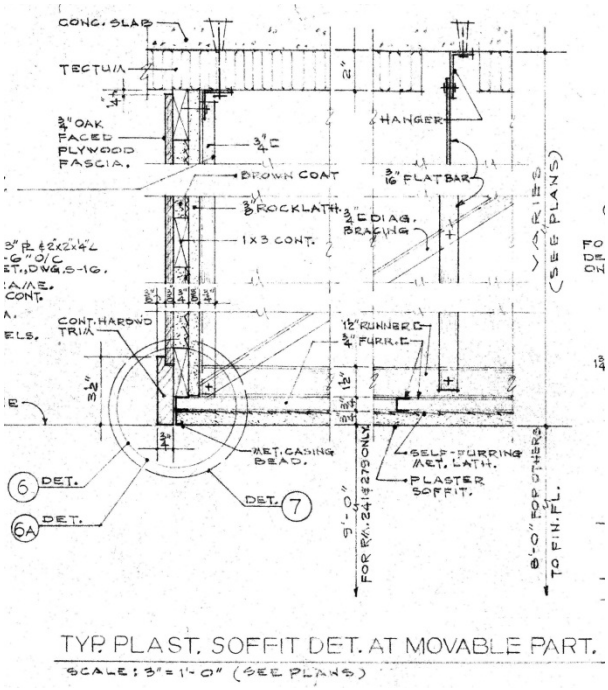


Figure G-27: Typical detail of soffit construction at movable partitions. [*From 1968 Drawing A-26*]

Above Teacher Closets

h. Eight **small teacher's closets** with solid gypsum walls are located in Lower and Upper Level classrooms. These small closets also contain ductwork and registers as part of the building's ventilation (exhaust) system. The top portion of these closets must be removed (and subsequently reconstructed) in order to remove remaining Tectum form plank and associated mastic and to encapsulate the exposed concrete ceilings above.

   i. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above 8 closets x 5 SF each = approximately 40 SF total.

Figure G-28: Typical classroom teacher's closet.

Concealed Above Suspended Ceilings

i. As previously stated, Tectum form plank was used as the formwork to support placement of cast-in-place concrete floor and roof slabs, and was left in place in classrooms and other areas as the final finished ceiling surface. The Tectum form planks must span the entire distance from beam to beam (typically approximately a 10'-0" span). Other areas of the building (such as the Main Administration area and typical corridors) called for suspended acoustical tile ceiling assemblies to serve as the finished ceiling surface. At these locations, standard wooden form boards were used to support placement of concrete floor and roof slabs. After the concrete slabs cured, the form boards were removed, leaving bare concrete slabs above the suspended ceilings. There are a number of areas in the building where a partition wall running parallel to the concrete beams separates a space with an exposed Tectum form plank ceiling (such as a classroom) from a space with a suspended acoustical tile ceiling (such as a corridor). In this situation, the 10'-0" Tectum form plank span extends into the suspended ceiling space until it reaches the next concrete beam. Removal of these areas of Tectum form plank and mastic, and encapsulation of the concrete ceiling, requires removal and subsequent reinstallation of sections of the suspended acoustical tile ceiling system. [Note: Identification of areas of **Tectum form plank**

concealed above suspended ceilings is based on analysis of the existing construction drawings, confirmed by limited visual observation. Actual quantities cannot be definitively confirmed without removal of (or inspection above) all suspended ceiling tiles.]

i. Quantity: Remove Tectum form plank above suspended ceilings (including removal and reinstallation of suspended ceiling systems), and subsequently encapsulate concrete = approximately 1,475 SF x 1.20 (contingency) = approximately 1,770 SF total.

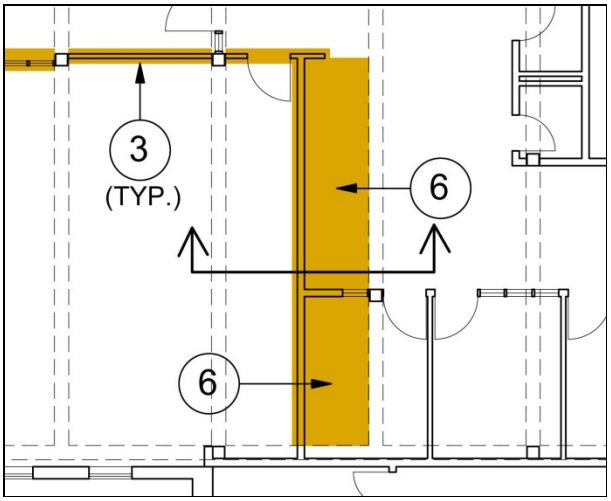


Figure G-29: Partial plan showing remaining portion of Tectum form plank span to be removed above suspended ceiling at corridor and small office space (Note 6). See Figure G-30 for section drawing indicated on plan.

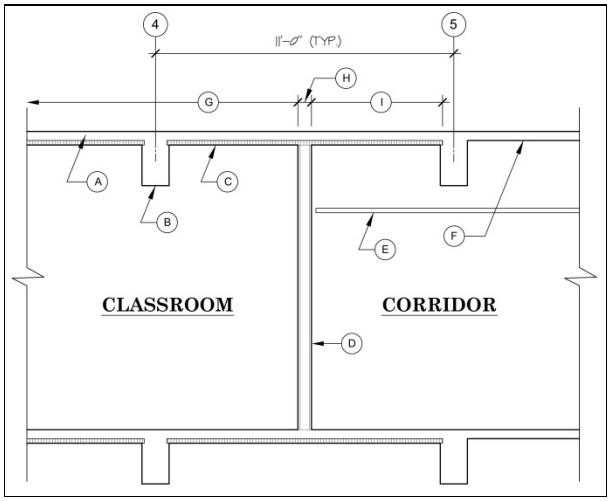


Figure G-30: Section at partition between classroom and corridor. A = concrete roof / floor slab; B = concrete beam; C = Tectum form plank; D = steel stud / plaster partition; E = suspended ceiling; F = bare concrete roof / floor slab (no form plank); G = exposed form plank removed in 2011; H = remaining form plank to be removed at top of partition; I = remaining form plank to be removed above suspended ceiling.

Figure G-31: Tectum form plank concealed above suspended ceiling at corridor.

Residue From 2011 Project

j. CGKV observed some limited areas where portions of **Tectum form plank and associated mastics** were **not successfully completely removed** during the 2011 PCB Source Removal project. Remaining material was most commonly found in the slot that forms the intersection between concrete beams and concrete slabs. CGKV did not identify all such locations, so an allowance is used here for quantification.

i. Quantity: Allowance for removal of Tectum form plank and associated mastic residue remaining from 2011 project = approximately 200 LF total.

Figure G-32: Portion of Tectum form plank and mastic not fully removed during 2011 project.

4. Interior Caulk:

a. PCB-containing interior caulk was removed in 2011 generally only where it was accessible. **Concealed interior caulk** likely still remains at areas such as behind metal lockers [Figure G-33] and behind gymnasium wall pads

[Figure G-34]. There may be instances where interior caulk still remains above suspended acoustical ceiling tiles, but EnviroScience reported that care was taken to address these areas in 2011, and CGKV found evidence to support this assertion [Figure G-35]. Removal of remaining concealed caulk would require removal and reinstallation of metal lockers, suspended ceiling tiles, wall pads, and the like. Future work will require careful examination to identify hidden sections of interior caulk. CGKV did not identify all locations of possible concealed interior caulk, so an allowance is used here for quantification.

i. Quantity: Allowance for removal, and subsequent replacement, of concealed interior caulk = approximately 200 LF total

Figure G-33: Interior caulk at expansion / control joint in masonry wall is likely still in place behind the lockers.

Figure G-34: Interior caulk at expansion / control joint in masonry wall is likely still in place behind wall pads in the gymnasium.

Figure G-35: Interior caulk at expansion joint removed above suspended ceiling tiles.

5. Foam Filler Between Interior Concrete Columns / Beams and Interior Plaster Walls:

a. Similar to interior caulk, foam fillers forming the resilient joint between cast-in-place concrete columns and beams and abutting plaster partitions were removed in 2011 where accessible. This **PCB-containing foam** material is likely still present in some concealed locations behind existing metal lockers and chalk boards [Figures G-36 and G-37]. EnviroScience reports that care was taken to remove foam fillers where they extended above suspended ceiling tiles [Figure G-38], though any future work will require careful examination to confirm that hidden sections of foam filler were not left behind [Figure G-39].

i. Quantity: Allowance for removal of concealed foam filler = approximately 500 LF total.

Figure G-36: Interior foam filler at joints between concrete columns / beams and steel stud / plaster partitions is indicated by red arrow. This joint with foam filler likely extends down and remains behind existing lockers.

Figure G-37: Foam filler remains where concealed behind edge of existing chalk board.

Figure G-38: EnviroScience reported that care was taken to remove foam fillers above existing suspended ceilings.

Figure G-39: Red arrow points to segment of foam filler between metal corner bead and concrete column that was not removed in 2011 from above the suspended ceiling at this location.

[Page left intentionally blank.]

H. REMOVAL OR ENCAPSULATION OF PCB REMEDIATION WASTES

Through sampling and testing, EnviroScience identified several conditions where substrate materials that were in direct contact with PCB Bulk Products (Primary Sources of PCBs) have absorbed PCBs in concentrations exceeding 1 ppm. EnviroScience also identified a number of interior substrates that, while not believed to have been in direct contact with PCB Bulk Products, are nonetheless contaminated by PCBs at >1 ppm. These materials may have been contaminated by PCBs in dust or in the air. Research by the USEPA and others has shown that many common interior building materials can act as a "PCB sink" and absorb PCBs. Based on USEPA findings, CGKV and EnviroScience identified a number of additional materials present inside Westport Middle School that might act as PCB sinks and therefore could be contaminated, though testing has not been performed to confirm this.

As discussed in Section F of this Study, as a condition for the continuing use of Westport Middle School as a middle school facility, all PCB Remediation Wastes in concentrations >1 ppm must be either removed from the site (thus allowing unrestricted use) or encapsulated (leaving restrictions in place and requiring on-going oversight and monitoring). This Section H describes the work that is likely necessary to either remove or encapsulate PCB Remediation Wastes as they are known to exist (through sampling and testing) and as they are presumed to exist (based on USEPA research). Much more sampling and testing should be conducted prior to any possible project to remove or encapsulate PCB Remediation Wastes in order to confirm actual PCB concentrations and absorption depths.

As discussed in Section F of this Study, encapsulants are intended to serve two purposes: they prevent direct contact with PCB contaminated materials, and they reduce the release of potential dust to the environment. Painted epoxy coatings perform both functions, as could an airtight enclosure or hard, sealed barrier.

While Section D of this Study lists discrete building materials known or presumed to be contaminated with PCBs, this Section H looks at assemblies of inter-related construction materials that come together to form more comprehensive building systems such as window openings and door openings.

[Note: The mark ** indicates recommended options. See Section M, DISCUSSION, for further information.]

1. Exterior Window Openings:

Porous brick at existing exterior window jambs and sills in direct contact with PCB-containing exterior caulk was found to have absorbed PCBs >1 ppm to at least the

1/2" to 1" depth range. Cast-in-place concrete beams at exterior window heads absorbed PCBs >1 ppm to at least the 0" to 1/2" range. Please note, however, that the ultimate depth of PCB absorption into brick and concrete substrates at window openings has not been definitively established and should be confirmed through further sampling and testing.

Removal:

a. Removal of the contaminated PCB Remediation Wastes at window masonry openings would first require removal of all of the existing aluminum window systems (and removal of interior wood and Corian trim along with underlying wood blocking that occurs at Type 'A/A1' windows). Removal, and subsequent replacement, of all existing windows and associated trim is already included in Section G.2 above as part of the required effort to remove PCB-containing interior glazing compound.

b. Next, one half-brick width (approximately 3-5/8") of brick veneer would be removed at jambs (either by saw-cutting or by toothing-out whole and half-bricks), and one brick course would be removed at sills. [The brick piers common between Type 'B' windows do not play a vertical load-bearing function. These piers are only 1-1/2 bricks wide, so it is more feasible to actually remove the piers in their entirety rather than try to remove a more limited quantity of brick.]**

   i. Quantity: Remove one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.
   ii. Quantity: Remove one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.
   iii. Quantity: Remove 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.
   iv. Quantity: Remove one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.
   v. Quantity: Remove one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.

c. Contaminated material in the concrete beams at the window heads would be removed through scarification or other means to a depth of not less than 1/2" and to 2" in either direction (inward and outward) from the original caulk joint.**

   i. Quantity: Remove 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.

ii. Quantity: Remove 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.

d. For the continuing use of Westport Middle School, restoration of the masonry openings and replacement of the window systems would be necessary. Brick veneer at jambs and sills can be rebuilt "in-kind" to essentially match the appearance and function of the pre-existing condition. Voids in the concrete beams at window heads can be patched with metal pins helping to bond new concrete infill material to the existing structure. Replacement of the aluminum window system, including new interior trim, is included in Section G.2 above.**

i. Quantity: Rebuild one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.

ii. Quantity: Rebuild one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.

iii. Quantity: Rebuild 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.

iv. Quantity: Rebuild one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.

v. Quantity: Rebuild one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.

vi. Quantity: Pin and patch 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.

vii. Quantity: Pin and patch 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.

e. An alternative to re-building the brick piers between Type 'B' windows "in-kind" would be to remove them entirely and install a curtain wall window system across the larger structural opening.

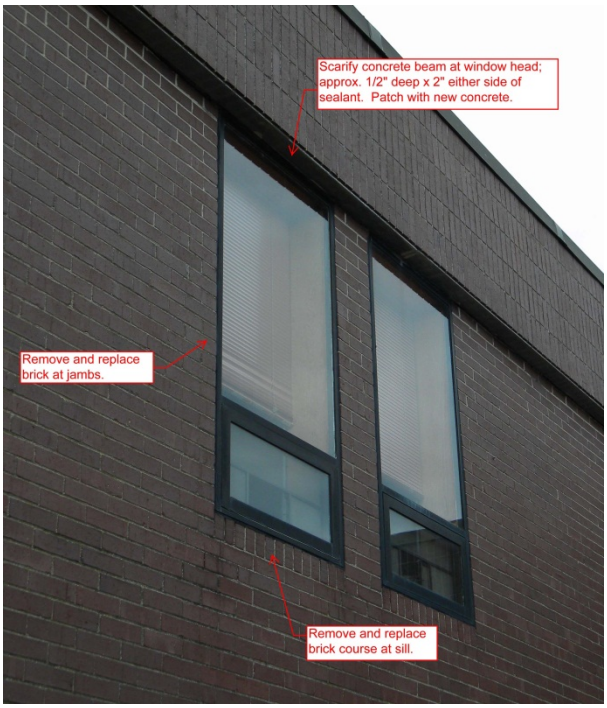


Figure H-01: Existing brick jambs and sill and concrete head at typical Type 'A/A1' windows.

Figure H-02: Existing brick jambs and sill and concrete head at typical Type 'B' windows.

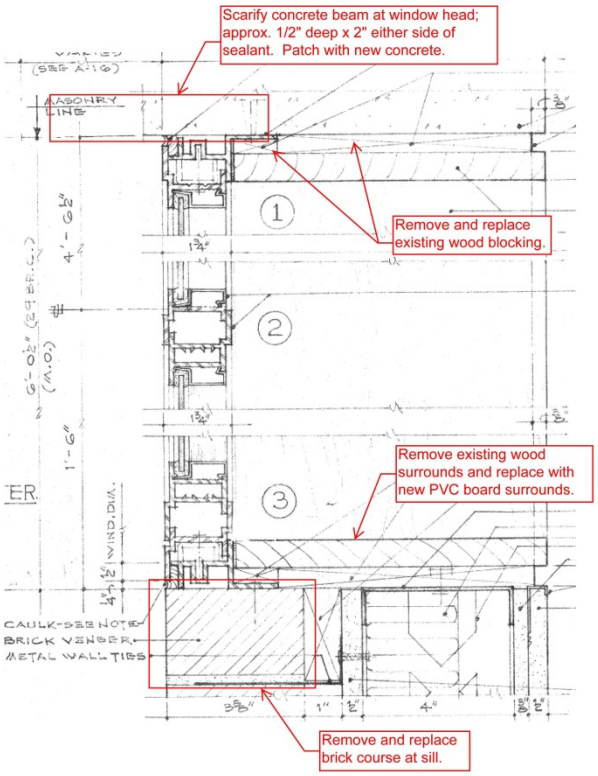


Figure H-03: Vertical details at Type 'A/A1' windows indicating PCB Remediation Wastes to be removed. [*From 1968 Drawing A-20*]

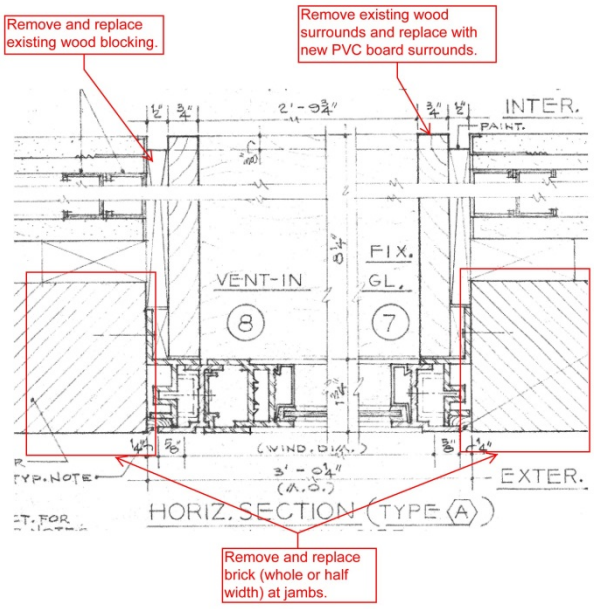


Figure H-04: Horizontal details at Type 'A/A1' windows indicating PCB Remediation Wastes to be removed. [*From 1968 Drawing A-20*]

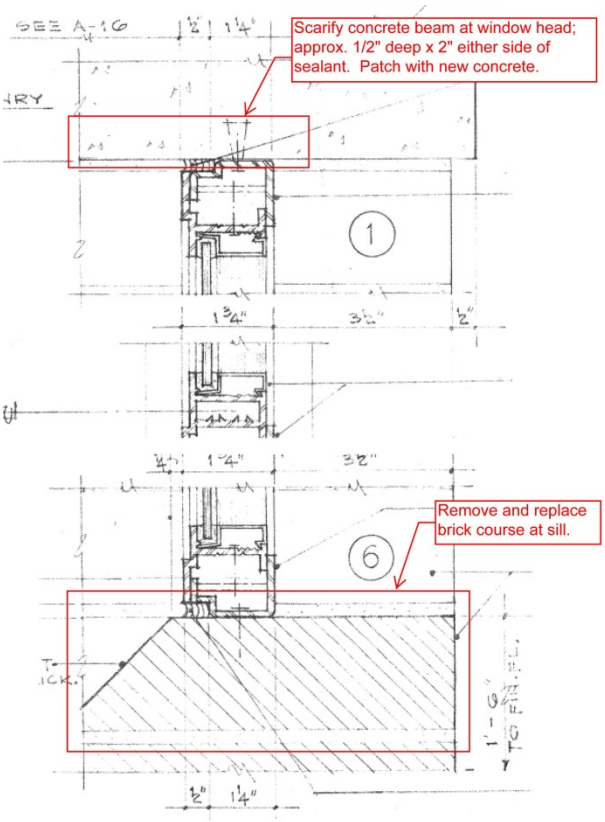


Figure H-05: Vertical details at Type 'B' windows indicating PCB Remediation Wastes to be removed. [*From 1968 Drawing A-20*]

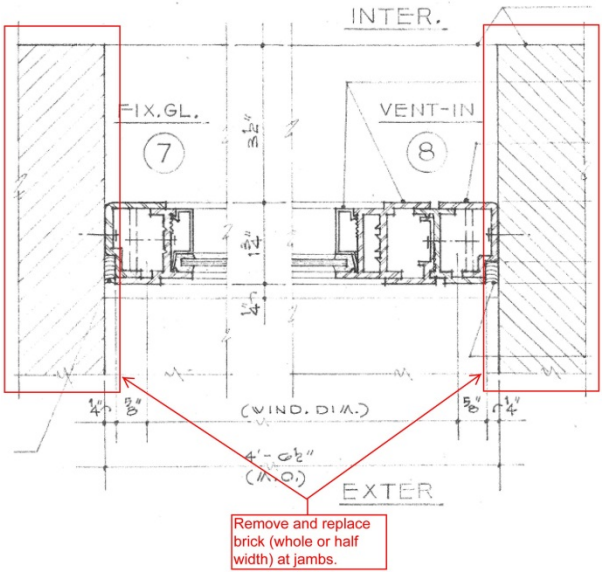


Figure H-06: Horizontal details at Type 'B' windows indicating PCB Remediation Wastes to be removed. [*From 1968 Drawing A-20*]

Encapsulation:

f. Encapsulation of brick and concrete at window masonry openings could be accomplished with a painted epoxy coating applied over the surfaces indicated to be removed above. However, exterior painted brick and concrete would be exposed to weathering and would require frequent monitoring and upkeep. Exterior paint around window openings would also significantly alter the appearance of the building. Encapsulation with an epoxy coating, especially at exterior surfaces, is not recommended.

g. Brick and concrete at window openings could also be encapsulated with a rigid cladding material. A metal composite material panel should be used, rather than thinner metal coil stock, for durability and to avoid oil-canning. Like a painted epoxy coating, the installation of a cladding material to frame the window openings would change the appearance of the building exterior, though long-term maintenance would be less. The permeability of the

cladding system should be carefully considered to avoid possible conflicts with vapor transmission through the exterior envelope.

i. Quantity: Clad the perimeter of all window openings with metal composite material system = approximately 6,700 SF total.

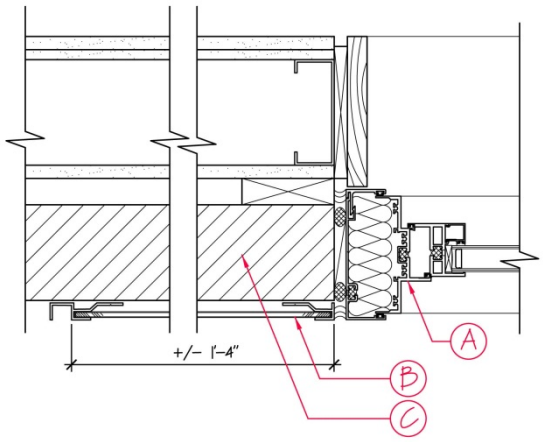


Figure H-07: Cladding / encapsulation at typical Type 'A/A1' windows. A = new aluminum window; B = new metal composite material cladding; C = existing brick veneer.

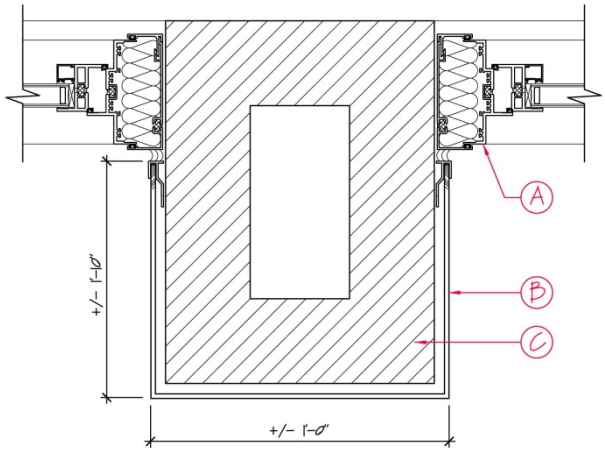


Figure H-08: Cladding / encapsulation at typical Type 'B' windows. A = new aluminum window; B = new metal composite material cladding; C = existing brick veneer pier.

2. Exterior Door Openings:

Similar to existing window openings, existing brick and concrete at exterior door assembly jambs and heads absorbed PCBs from direct contact with original perimeter sealants. Testing found PCBs >1 ppm at a depth of at least 1/2" to 1" in brick and 0" to 1/2" in concrete, but the ultimate depth of PCB absorption into brick and concrete substrates at door assembly openings has not been definitively established and should be confirmed through further sampling and testing.

Removal:

a. Removal of PCB Remediation Wastes at exterior door openings would first require removal of the existing door and frame systems, including doors, frames, glazing, and spandrels.**

i. Quantity: Remove 5 two-story exterior door assemblies x 150 SF each = approximately 750 SF total.

ii. Quantity: Remove 2 one-story exterior door assemblies x 98 SF each = approximately 196 SF total.

iii. Quantity: Remove 1 storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total.

b. The removal of quantities of PCB Remediation Waste brick and cast-in-place concrete materials at the exterior door openings would be accomplished in a manner similar to that described for windows above. Please note that concrete materials only occur in direct contact with exterior door heads at the two one-story exterior door assemblies; the two-story exterior door assemblies and the storefront assembly at the receiving area currently have Tectum form plank at the heads, which is removed as PCB Bulk Product Waste in Section G.3 above.**

i. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total.

ii. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total.

iii. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total.

iv. Quantity: Remove 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total.

Figure H-09: Brick at jambs and concrete at head of one-story exterior door assembly.

c. On-going use of the building will require restoration of the exterior door masonry openings and installation of replacement exterior door assemblies similar to the existing. Brick veneer at jambs can be rebuilt "in-kind", and voids in the concrete ceilings at one-story door assembly heads can be patched similar to the process described above for windows.**
   i. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total.
   ii. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total.
   iii. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total.
   iv. Quantity: Pin and patch 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total.

d. Replacement exterior door assemblies would include a thermally broken aluminum storefront or curtain wall system with 1" thick insulated glass at doors, sidelights, and transoms. [See Figures G-02, G-03, and G-05 for depictions of existing exterior door assembly configurations to be replicated.]**
   i. Quantity: Provide 5 new two-story exterior door assemblies x 150 SF each = approximately 750 SF total.
   ii. Quantity: Provide 2 new one-story exterior door assemblies x 98 SF each = approximately 196 SF total.
   iii. Quantity: Provide 1 new storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total.

e. The five two-story exterior door assemblies each support existing cabinet unit heaters located directly above the doors. They are concealed behind an oak plywood enclosure and supply heat to each of the exterior stairways [Figures H-10 and H-11]. In order to replace the exterior door assemblies, the cabinet unit heaters (including piping and control wiring) need to be removed and reinstalled. The storefront assembly in the receiving area also supports a finned tube heat source with plywood enclosures [Figure H-12]. This mechanical system must be removed and reinstalled, too.**
   i. Quantity: Remove and reinstall cabinet unit heaters and plywood enclosures at 5 exterior door assemblies.
   ii. Quantity: Remove and reinstall approximately 20 LF finned tube radiation and plywood enclosure at receiving area storefront.

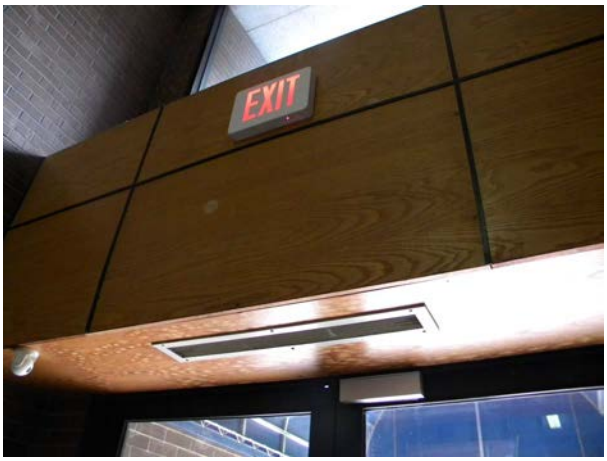


Figure H-10: Existing cabinet unit heater enclosure above typical two-story exterior door assembly head.

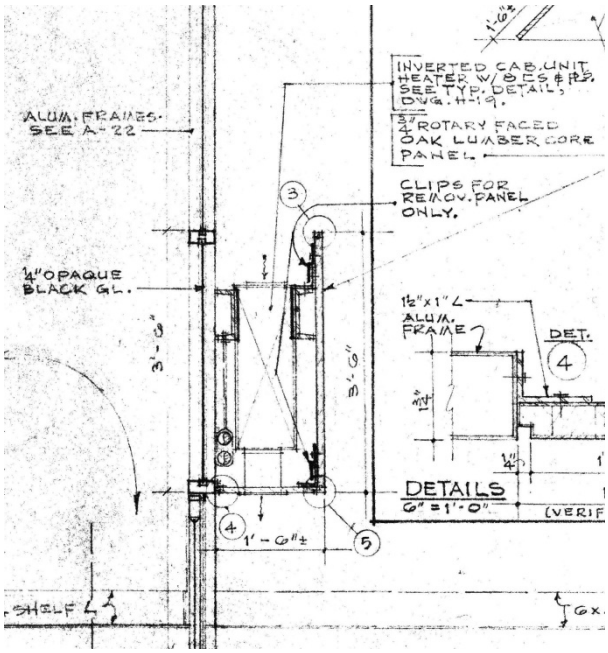


Figure H-11: Detail of typical cabinet unit heater at two-story exterior door assembly head. [*From 1968 Drawing A-24*]

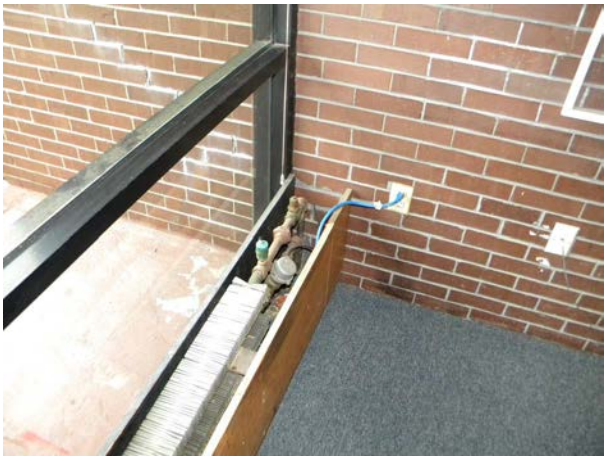


Figure H-12: Finned tube heat source mounted to storefront assembly at receiving area.

Encapsulation:

f. Encapsulation of brick and concrete at exterior door masonry openings can be accomplished with epoxy coatings or rigid cladding in a manner similar to that described for windows above, though encapsulation with an epoxy coating, especially at exterior surfaces, is not recommended. Encapsulation can be performed without removing the existing exterior door assemblies. The cladding system would be installed at both the exterior and interior of the door frames in order to fully encapsulate the PCB Remediation Wastes.

i. Quantity: Clad all exterior door assembly openings with metal composite material system = approximately 560 SF total.

3. Exterior Concrete Walkways:

EnviroScience sampled concrete in the exterior walkway outside Door No. 100 (near Classroom 166) and found that it contained PCBs >1 ppm at a depth range of 0" to 1/2". Based on this result, this study surmises that all concrete walkways immediately adjacent to the building perimeter must be treated as PCB Remediation Waste. The definitive extent of PCB contamination in exterior walkways must be confirmed through further sampling and testing.

Removal:

a. Exterior concrete walkways meet the building at each of the seven exterior door assemblies at the Lower Level (or at an intermediate level a few steps above the Lower Level). It is presumed in this Study that concrete slabs on grade should be removed and replaced in their entirety at each of these locations to a distance of at least 5'-0" from the building drip line. Walkways parallel to exterior walls (e.g. - locations C and G in Figure H-13) are proposed to be replaced full width.**

i. Quantity: Remove and replace reinforced concrete slab-on-grade walkways at seven building entrances = approximately 1,430 SF total.

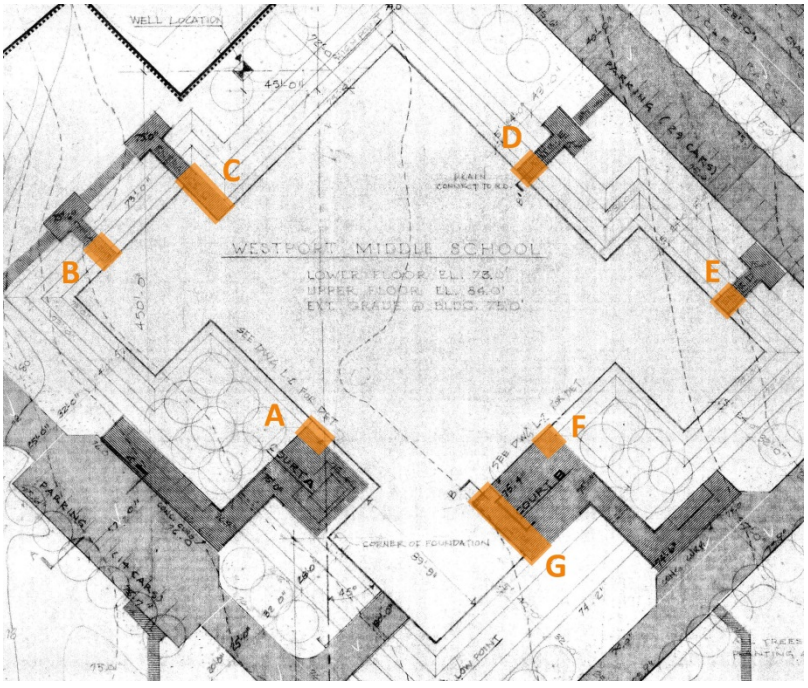


Figure H-13: Exterior concrete walkways at building entrances / exits. [*From 1968 Drawing L-1*]

Figure H-14: Exterior walkways near doors 75 and 81 (locations G and F from plan above).

Figure H-15: Exterior walkway near door 30 (location C from plan above).

Encapsulation:

b. CGKV is not aware of any feasible means by which exterior concrete walkways could be encapsulated.

4. Exterior Soils:

Sampling and testing by EnviroScience identified quantities of PCBs in exterior soils at the building perimeter in concentrations requiring removal as PCB Remediation Waste. The finite extent of required removal has not been determined.

Removal:

a. For the purpose of this Study, we estimate that all existing soils around the perimeter of the building should be removed and disposed of to a depth of 6" and to a distance of at least 5'-0" from the building "drip-line". Suitable replacement soil should be brought in and re-seeded.**
   i. Quantity: Remove PCB-contaminated soil at the building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.
   ii. Quantity: Provide new soil at building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.
   iii. Quantity: Re-seed at building perimeter = approximately 8,000 SF total.

Encapsulation:

b. It may be possible to encapsulate exterior soils by placing 8" of concrete over it, though doing so would require displacement of soils anyway. CGKV does not recommend encapsulating exterior soils.

5. Brick and Concrete at Interior Caulk and Joint Fillers:

EnviroScience determined that interior brick and concrete materials that were in contact with PCB-containing caulk absorbed PCBs at concentration > 1 ppm. (By extension, it is assumed for this Study that concrete columns and beams are contaminated by the PCB-containing foam joint fillers that separate them from plaster walls.) The depth of this absorption is not indicated, but for the purpose of this Study will be assumed to be similar to that measured at exterior window and door openings.

Interior caulk, foam joint fillers, brick, and concrete come together in several different configurations at Westport Middle School. [See Large Format Drawings 3A and 3B for locations of various interior joint applications.] Options for removal and encapsulation of PCB Remediation Wastes for each configuration are discussed below.

Joint at Brick to Concrete at Stairways

Removal:

a. Caulk joints at brick veneer to concrete columns occur at all five main stairways at the building perimeter. Removal of PCBs absorbed into the brick and concrete could involve removal and replacement of whole- and half-bricks as well as scarification and parging of concrete columns immediately adjacent to the caulk joints. These joints extend full height above existing suspended ceilings, which would need to be removed and reinstalled to complete the work. Steel doors and frames from the stairways to the main corridors would need to be removed and reinstalled at three locations where they are in close proximity to the caulk joint.
   i. Quantity: Remove, and subsequently replace, backer rod and caulk between brick veneer and concrete columns, 11 LF x 2 joints per stairway x 5 stairways x 2 floors = approximately 220 LF total.
   ii. Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 8" width x 11 LF per side x 2 sides x 5 stairways x 2 floors = approximately 220 LF total.

iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 11 LF per side x 2 sides x 5 stairways x 2 floors = approximately 220 LF total.

iv. Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.

v. Quantity: Remove, and subsequently reinstall, 3 steel-framed door, fixed lite, and fascia assemblies (including backer rod and caulk) x 100 SF each = approximately 300 SF total.

Figure H-16: Joint at brick to concrete at stairways. (Note stripes of gray epoxy encapsulant at either side of existing joint applied in 2011.)

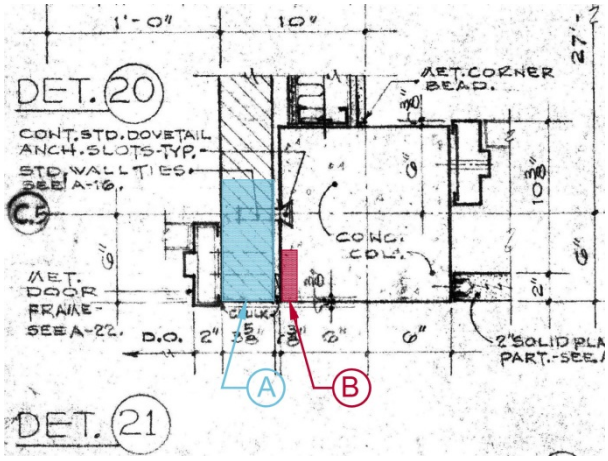


Figure H-17: A = brick to be removed and replaced; B = concrete to be scarified and parged. [*From 1968 Drawing A-18*]

Encapsulation:

b. Encapsulation of brick veneer and concrete surfaces on either side of the caulk joint, with a painted epoxy coating, is a recommended alternative to full removal of PCB Remediation Wastes. This method was generally employed during the 2011 PCB Source Removal Project, with a narrow strip of encapsulant painted over the brick and concrete edges on either side of the caulk joint. For an improved and more consistent appearance than currently exists, all contiguous exposed surfaces of brick veneer and concrete columns should be painted with encapsulant. This work might require removal and reinstallation of suspended ceilings, but existing steel-framed door and fixed-lite assemblies may remain in place.**

i. Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 2 columns per stairway x 5 stairways x 2 floors = approximately 340 SF total.

ii. Quantity: Encapsulate exposed edge of brick with epoxy paint x 4 SF x 2 walls x 3 landings = approximately 24 SF total.

iii. Quantity: Encapsulate exposed contiguous brick wall with epoxy paint x 55 SF x 2 walls x 7 landings = approximately 770 SF total.

iv. Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.

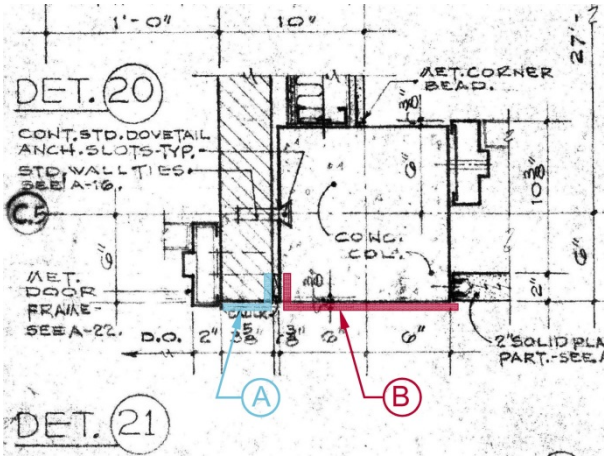


Figure H-18: A = encapsulate existing brick surfaces; B = encapsulate existing concrete surfaces. [*From 1968 Drawing A-18*]

Joint at Brick to Concrete at Window Piers

Removal:

c. Brick veneer piers between typical Type 'B' windows meet interior concrete columns at a caulk joint, as shown in Figure H-20. PCBs in the original caulk joint were absorbed into the adjacent brick and concrete materials, thus classifying them as PCB Remediation Wastes. Section H.1 above already describes work to remove and replace the contaminated brick materials. During this proposed process of removing and re-building the brick piers, contaminated portions of the concrete columns can be scarified to remove absorbed PCBs and subsequently patched with a compatible cementitious material.**

i. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 2 edges per column x 21 columns = approximately 420 LF total.

ii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 1 edge per column x 5 columns = approximately 50 LF total.

Encapsulation:

d. As an alternative to scarifying and patching contaminated concrete, the concrete columns can be encapsulated with an epoxy coating. For a more consistent appearance, it is recommended that all exposed surfaces of the columns be encapsulated.

i. Quantity: Encapsulate concrete columns with epoxy paint x 33 SF per column (average) x 21 columns = approximately 693 SF total.

ii. Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 5 columns = approximately 85 SF total.

Figure H-19: Joint at brick to concrete at piers.

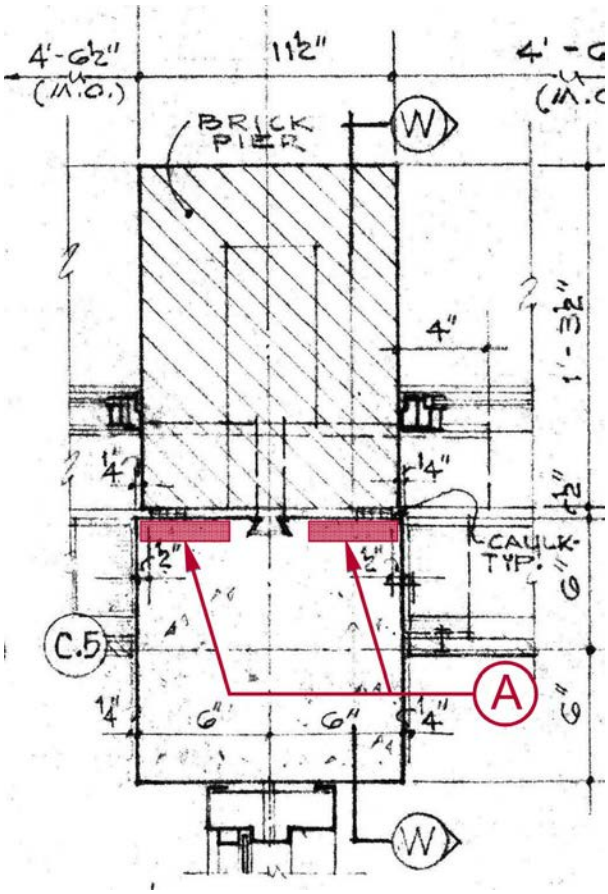


Figure H-20: A = concrete to be scarified and parged. [*From 1968 Drawing A-18*]

Joint at Steel Frames to Brick Veneer

Removal:

e. PCB-containing caulk was removed at interior joints between steel door and fixed-lite frames and brick veneer walls. Steel frames are set in brick veneer masonry openings at the Lower and Upper Level corridor landings at all five stairways. (Note: Removal of contaminated brick adjacent to door frames at three of these stairway locations is already included in Section I.5.a above.) They also occur at a number of doorways in the area of the band room and auditorium. Removal of PCB Remediation Waste would entail removal of whole- or half-bricks at jambs immediately adjacent to the caulk joint, and the subsequent rebuilding of the masonry jambs with brick to match. The existing steel frames would need to be removed and reinstalled to support this work.

   i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 15 large openings x 100 SF per opening (average) = approximately 1,500 SF total.

   ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 4 small openings x 25 SF per opening (average) = approximately 100 SF total.

   iii. Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 12" width x 11 LF height per jamb (average) x 42 jambs = approximately 462 LF total.

Encapsulation:

f. PCB contaminated brick veneer jambs at steel frames can be left in place and encapsulated with an epoxy coating. For a consistent appearance, it is recommended that an 8" to 12" wide "accent band" be painted at both sides of the steel frames.**

   i. Quantity: Encapsulate exposed brick wall jamb with epoxy paint "accent band", 12" wide x 11 LF per jamb x 38 jambs x 2 sides each = approximately 836 SF total.

Joint at Steel Frames to Reinforced Brick Masonry Walls

Removal:

g. The walls that form the perimeter of the gymnasium and auditorium spaces are constructed of reinforced brick masonry, where inner and outer wythes of brick are combined with a solid concrete core to form a composite wall

structure. There are a number of masonry openings for steel door and fixed-lite frames in these walls, and original PCB-containing caulk at the heads and jambs contaminated the adjacent brick materials. Because the brick is an integral component of the wall structure at the jambs and lintel, it may not be structurally feasible to remove and replace full brick units. Instead, up to 1/2" of the outer surfaces of the brick at jambs and lintels may be removed (through saw-cutting or grinding or sand-blasting) and then be patched with a cementitious material (perhaps colored to match the brick) to restore the finished surface. It must be first confirmed, however, that removal of PCB Remediation Wastes is not required beyond the 1/2" limit.

i. Quantity: Remove, and subsequently reinstall, steel-framed door and fixed-lite assemblies (including backer rod and caulk) at 15 openings x 50 SF per opening (average) = approximately 750 SF total.

ii. Quantity: Remove, and subsequently parge, 1/2" depth brick x 12" total width x 23 LF (jambs + head, average) x 15 openings = approximately 345 LF total.

Encapsulation:

h. As with other brick surfaces listed above, reinforced brick masonry at steel frame jambs and heads may be left in place and encapsulated with an "accent band" epoxy coating at both sides of the frame.**

i. Quantity: Encapsulate exposed brick jambs and heads with epoxy paint "accent band", 12" wide x 23 LF per opening (average) x 15 openings x 2 sides each = approximately 690 SF total.

Figure H-21: Joint at steel frames to reinforced masonry walls.

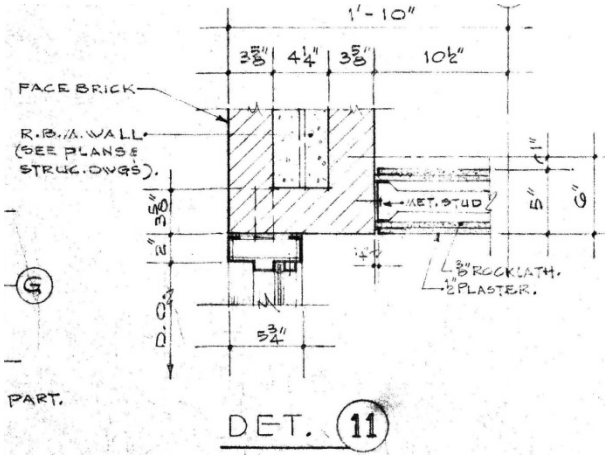


Figure H-22: Detail of existing steel frame to reinforced masonry jamb. [*From 1968 Drawing A-19*]

Joint at Steel Frames to Concrete Columns

Removal:

i. Steel door and fixed-lite frames can be found adjacent to concrete columns throughout the building. Concrete in direct contact with the original PCB-containing caulk at steel frame jambs is PCB Remediation Waste. Removal would require scarification and subsequent restoration through parging, and would necessitate removal and reinstallation of steel door and fixed-lite frame assemblies.
   i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 52 large openings x 110 SF per opening (average) = approximately 5,720 SF total.
   ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 38 small openings x 25 SF per opening (average) = approximately 950 SF total.
   iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 10" width x 11 LF per jamb x 130 jambs = approximately 1,430 LF total.

Encapsulation:

j. Concrete columns at steel door and fixed-lite frames may remain in place and be encapsulated with an epoxy coating. This can be accomplished without removing and reinstalling steel frame assemblies. CGKV recommends that all exposed surfaces of concrete columns be painted for a consistent appearance.**
   i. Quantity: Encapsulate concrete columns with epoxy paint x 30 SF per column (average) x 130 columns = approximately 3,900 SF total.

Figure H-23: Joint at steel frame to concrete. (Note stripes of gray epoxy encapsulant at either side of existing joint applied in 2011.)

Expansion / Control Joints in Reinforced Brick Masonry Walls

Removal:

k. Expansion and/or control joints, while not indicated in the original 1968 construction drawings, are visible in at least four locations in the gymnasium. It may not be feasible to remove and replace full contaminated brick units at either side of the caulk joint in these reinforced brick masonry walls. Instead, up to 1/2" depth of brick may be removed (through saw-cutting or grinding or sand-blasting) to 4" either side of the joint at both faces of the wall. The finished surface of the brick can be restored with a cementitious fill, perhaps colored to match the brick. It must be confirmed that removal of PCB Remediation Wastes is not required beyond the 1/2" limit.
   i. Quantity: Remove, and subsequently replace, backer rod and caulk at expansion / control joints x 11 LF height x 20 joints = approximately 220 LF total.
   ii. Quantity: Remove, and subsequently parge, 1/2" depth brick x 8" total width (4" either side of joint) x 11 LF height x 20 joints = approximately 220 LF total.

Encapsulation:

l. Existing contaminated brick immediately adjacent to expansion / control joints in reinforced brick masonry walls may be encapsulated with an "accent band" of epoxy paint.**
   i. Quantity: Encapsulate brick with epoxy paint x 12" wide 11 LF tall x 20 joints = approximately 220 SF total.

Joint at Concrete Columns and Beams to Plaster Walls

Removal:

m. EnviroScience estimated that approximately 12,000 linear feet of interior PCB-containing foam filler was removed at the joints between concrete columns and beams and plaster walls. In keeping with our basic approach to removing PCBs absorbed into concrete, the columns and beams would be scarified to a depth of approximately 1/2", 4" wide (2" either side of the joint at all removed foam fillers), for the entire length of all joints. These channels in the concrete would then be subsequently filled with a suitable cementitious material to restore the original surface plane. This work might

only be possible if the steel stud and plaster walls are cut back from the concrete structure and subsequently patched.

i. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x approximately 12,000 LF = approximately 12,000 LF total.

ii. Quantity: Remove, and subsequently re-build, steel framing and plaster walls immediately adjacent to concrete columns and beams = approximately 12,000 LF.

Encapsulation:

n. In lieu of scarifying concrete and removing and re-building plaster partitions, contaminated surfaces of concrete columns and beams can be encapsulated with an epoxy coating. For a consistent appearance, all exposed surfaces of concrete columns and beams adjacent to plaster partitions should be painted.**

i. Quantity: Encapsulate 136 concrete columns with epoxy paint x 24" wide (average) 11 LF tall = approximately 2,992 SF total.

ii. Quantity: Encapsulate 127 concrete columns with epoxy paint x 48" wide (average) 11 LF tall = approximately 5,588 SF total.

iii. Quantity: Encapsulate concrete beams with epoxy paint x 30" wide (average) 2,520 LF long = approximately 6,300 SF total.

iv. Quantity: Encapsulate concrete beams with epoxy paint x 52" wide (average) 1,325 LF long = approximately 5,742 SF total.

Figure H-24: Joint at concrete column to plaster wall.

6. Concrete Columns, Beams, and Slabs:

EnviroScience sampled and tested bare cast-in-place concrete at columns and ceilings above existing suspended acoustical ceiling tiles in the Main Administration area, where Tectum form plank (with known PCB-containing mastics) was not used

in the construction. Concrete was found to be contaminated with PCBs at >1 ppm. This suggests that typical cast-in-place concrete columns, beams, and ceilings that were not in direct contact with any known PCB Bulk Products may have absorbed PCBs through the air or through dust. It stands to reason that the cast-in-place concrete ceilings that were in direct contact with PCB-containing mastics associated with Tectum form plank are also contaminated and would be classified as PCB Remediation Waste.

Removal:

a. The depth of PCB contamination into existing concrete is not currently defined and should be ultimately confirmed through further sampling and analysis. For the sake of this Study, we will assume that all existing accessible concrete surfaces - at columns, beams, and ceilings - must be removed to a depth of 1/2". The surfaces can subsequently be patched with a compatible cementitious material reinforced with pins into the original concrete substrate.
   i. Quantity: Remove, and subsequently parge, 1/2" depth concrete at 136 columns x 24" width (average) x 11 tall LF each = approximately 2,992 SF total.
   ii. Quantity: Remove, and subsequently parge, 1/2" depth concrete at 258 columns x 48" width (average) x 11 tall LF each = approximately 11,355 SF total.
   iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 30" width (average) x 3,120 LF = approximately 7,800 SF total.
   iv. Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 52" width (average) x 8,560 LF = approximately 37,093 SF total.
   v. Quantity: Remove, and subsequently parge, 1/2" depth concrete at ceilings = approximately 85,175 SF total.

Encapsulation:

b. In lieu of removing a 1/2" deep layer of material from essentially all accessible concrete surfaces in the building, those surfaces can be left intact and encapsulated with a painted epoxy coating.**
   i. Quantity: Encapsulate concrete columns with epoxy paint at 394 columns = approximately 14,347 SF total.
   ii. Quantity: Encapsulate concrete beams with epoxy paint = approximately 44,893 SF total.

iii. Quantity: Encapsulate concrete ceilings with epoxy paint = approximately 85,175 SF total.

Figure H-25: Cast-in-place concrete columns, beams, and slabs.

7. Interior Brick Walls:

USEPA determined that brick can act as a PCB sink and become contaminated through absorption. Even interior brick surfaces not in direct contact with PCB Bulk Products (such as caulk) can absorb PCBs through the air or through dust. EnviroScience did not test typical interior brick wall surfaces for PCBs at locations away from known PCB Bulk Products. Based on the confirmed absorption of PCBs into concrete materials at Westport Middle School, however, it may be assumed that PCBs have contaminated interior brick walls as well. Sampling and testing should be performed to confirm whether or not interior brick walls would be classified as PCB Remediation Waste.

Brick walls are found at the interior of the building at several typical locations: at the five main perimeter stairways; at exterior walls of Upper Level spaces where Type 'B' windows are found (e.g. – Main Administration, Cafeteria, Media Center, and a few classrooms); at Lower and Upper Level main corridors ringing the central Gymnasium and Auditorium spaces; and within the Gymnasium and Auditorium (including the band room under the Auditorium) spaces themselves. Interior brick jambs and sills associated with Type 'B' windows are already called to be removed in Section H.1 above; only brick from sill to floor remains at these locations. Air sampling by EnviroScience in the Gymnasium and Auditorium spaces did not indicate elevated levels of PCBs, so it is assumed for the sake of this Study that brick walls within those spaces did not absorb PCBs to a degree (>1 ppm) that would require removal.

Removal:

a. Exposed brick walls at Upper Level spaces with Type 'B' windows are of brick veneer construction. Along with the work to remove and reconstruct brick piers and sills described in Section I.1 above, the remaining interior wythe of brick veneer from the sill to the floor can likewise be removed and re-built. Finned tube radiation, with a plywood enclosure, must be removed and reinstalled from in front of the brick veneer in order to accomplish this work.**

   i. Quantity: Remove, and subsequently reinstall, 531 LF of finned tube radiation with plywood enclosure = approximately 531 LF total.

   ii. Quantity: Remove, and subsequently rebuild, one interior wythe of brick veneer x 1'-4" high x 531 LF = approximately 708 SF total.

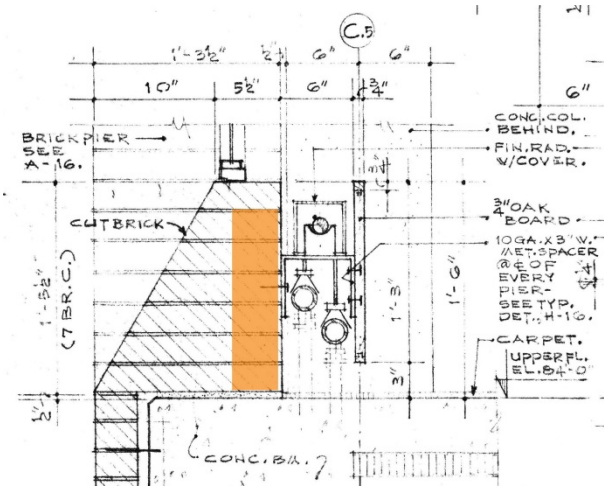


Figure H-26: Section detail [*From 1968 Drawing A-18, Detail V.*]

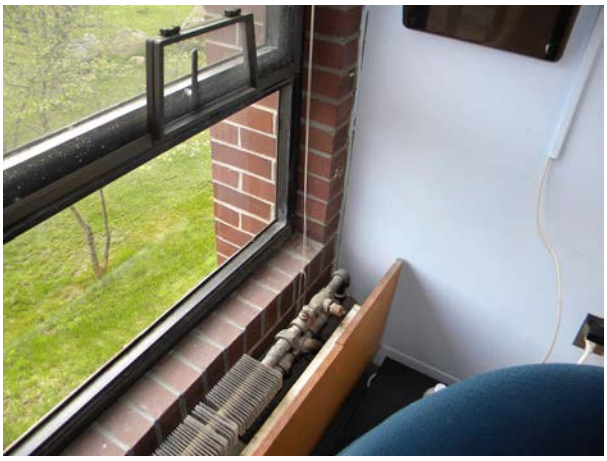


Figure H-27: Finned tube radiator and plywood cover at typical Type 'B' windows.

b. Two-story high walls inside the five main stairways are also of brick veneer construction. The brick veneer can be removed in its entirety, leaving the existing wall sheathing and steel stud back-up structure in place, and new brick veneer can be subsequently installed. Work would require removal and reinstallation of wall-mounted handrails.

   i. Quantity: Remove, and subsequently reinstall, 22 LF wall-mounted handrail x 5 stairways = approximately 110 LF total.

   ii. Quantity: Remove, and subsequently rebuild, 550 SF brick veneer x 2 walls x 5 stairways = approximately 5,500 SF total.

c. The interior walls between central Gymnasium and Auditorium spaces and the main corridor that rings them are of reinforced brick masonry

construction. Full wythes of brick cannot be removed without impacting the structural performance of these walls. In order to remove PCB contaminated brick material, it may be possible to remove just the outermost 1/2" face of the brick. The remaining rough brick substrate can subsequently be parged with a compatible cementitious material, leaving behind a plaster-like finished surface. Lockers at the Lower Level, shelving in the Media Center at the Upper Level, and miscellaneous wall-mounted items would need to be removed and reinstalled.

i. Quantity: Remove, and subsequently reinstall, 260 LF of existing lockers = approximately 260 LF total.
ii. Quantity: Remove, and subsequently reinstall, 100 LF of existing shelving = approximately 100 LF total.
iii. Quantity: Remove, and subsequently parge, 1/2" depth of existing brick walls = approximately 11,100 SF total.

Figure H-28: Brick veneer walls at stairways.

Figure H-29: Reinforced brick masonry walls at corridors.

Encapsulation:

d. As an alternative to full or partial removal of PCB contaminated brick material at interior walls, those walls may be left in place and encapsulated with an epoxy paint product. Requirements for removal and reinstallation of obstructing items such as finned tube radiators, lockers, and shelving need to be confirmed.

i. Quantity: Encapsulate brick walls below Type 'B' window sills with epoxy paint = approximately 708 SF total.
ii. Quantity: Encapsulate brick walls at stairways with epoxy paint = approximately 5,500 SF total.**

iii. Quantity: Encapsulate brick walls at Lower and Upper Level main corridors with epoxy paint = approximately 11,100 SF total.**

8. Painted Plaster Walls:

The majority of walls inside Westport Middle School are constructed of light gauge steel stud framing with 3/8" rock lath and 1/2" plaster. Plaster surfaces are typically painted. EnviroScience measured PCB concentrations in paint at Westport Middle School from >1 ppm to >50 ppm, and USEPA research indicates that certain kinds of paint can be strong PCB sinks (see Figure D-08). USEPA also found that gypsum wall board (a building material used in similar fashion as plaster) can be a PCB sink. EnviroScience did not sample and test plaster materials behind painted surfaces, and USEPA research referenced above also did not test absorption of PCBs past a layer of paint. Subject to confirmation through testing, it is possible that PCBs were absorbed through the paint and into the plaster substrates at Westport Middle School.

Removal:

a. Removal of paint from plaster surfaces could involve scraping, sand-blasting, or chemical stripping. Any technique to remove paint would likely damage the plaster substrate. This Study proposes removing plaster and rock lath in its entirety as a means to eliminate known PCB Remediation Wastes in wall paint as well as possible (though not confirmed) PCB Remediation Wastes in plaster. This work would require removing and reinstalling wall-mounted items such as chalkboards, white boards, and tack boards. Existing steel stud framing can stay in place and be re-covered with blue board and skimcoat plaster to restore the wall surfaces. Existing steel-framed door and fixed lite assemblies can generally remain in place as this work is performed.
   i. Quantity: Remove, and subsequently reinstall, wall mounted items such as chalkboards, white boards, and tack boards, 133 boards x 42.5 SF (average) = approximately 5,650 SF total.
   ii. Quantity: Remove painted plaster and rock lath wall surfaces = approximately 110,000 SF total.
   iii. Quantity: Provide new blue board with skimcoat plaster, painted = approximately 110,000 SF total.

Encapsulation:

b. As an alternative to removing all plaster walls within the building, PCB-contaminated wall paint (and the plaster behind it) can be encapsulated with

an epoxy coating. This approach will require that special procedures be followed when anchoring or fastening any new items to the existing walls.**

i. Quantity: Encapsulate painted plaster walls with epoxy paint = approximately 110,000 SF total.

Figure H-30: Painted plaster walls at corridor.

9. Interior Steel-Framed Door and Fixed Lite Assemblies:

Essentially all interior doorways at Westport Middle School are comprised of painted steel frames and painted hollow metal doors. Many door openings include sidelights, and glazed fixed lite assemblies (with or without doors) are frequently used as a transparent means of dividing spaces (especially at the Main Administration area and in the Media Center area).

EnviroScience determined in 2012 that the existing glazing compound at interior fixed lite assemblies includes concentrations of PCBs at >1 ppm but <50 ppm. (EnviroScience does not discuss whether this glazing compound originally contained PCBs or if PCBs were absorbed over time.) The paint on steel frames and doors probably also absorbed PCBs.

Removal:

a. In order to remove the PCB-contaminated glazing compound located at the perimeter of all fixed lite glass panes, the steel stops holding the glass in place would need to be removed, and the glass panes themselves taken out from the frames. [Most fixed lite assemblies also include a wood rail glazed into the steel frame with the glass. This wood, which may also be contaminated with PCBs, would be disposed of with the glass.] While it might be possible to clean PCBs from the stops and the glass panes and subsequently reinstall them, this Study recommends replacing these

materials. Glazing compound should be thoroughly cleaned from the main steel frame members.**

i. Quantity: Remove, and subsequently replace, glass and stops at fixed lite assemblies = approximately 4,300 SF total.

b. With the glass removed from the steel frames, all frames, as well as the hollow metal doors, can be thoroughly stripped (or abrasice-blasted) of PCB-contaminated paint down to bare metal. All steel frames and hollow metal doors can then be re-painted.**

i. Quantity: Strip, and subsequently re-paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.

ii. Quantity: Strip, and subsequently re-paint, steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.

[c. Steel is non-porous and will not absorb PCBs. An alternative to leaving steel-framed door and fixed lite assemblies in place and stripping them of PCB-contaminated paint would be to remove these assemblies in their entirety and replace them.]

Encapsulation:

d. It may be possible to encapsulate PCB-contaminated glazing compound at interior fixed lites by installing a new bead of sealant between the stops and the glass. Wood rails that are a part of the fixed lite assembly could be encapsulated with an epoxy paint.

i. Quantity: Provide new sealant at perimeter of all fixed lite panes = approximately 11,750 LF total.

ii. Quantity: Encapsulate with epoxy paint, 525 LF wood rails x 9" surface height (including depth) x 2 sides = approximately 788 SF total.

e. In lieu of stripping and re-painting all steel doors and frames, the surfaces can be encapsulated with an epoxy paint.

i. Quantity: Encapsulate with epoxy paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.

ii. Quantity: Encapsulate with epoxy paint steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.

Figure H-31: Steel-framed door and fixed lite assembly from corridor to classroom.

Figure H-32: Steel-framed door and fixed lite assemblies at Media Center.

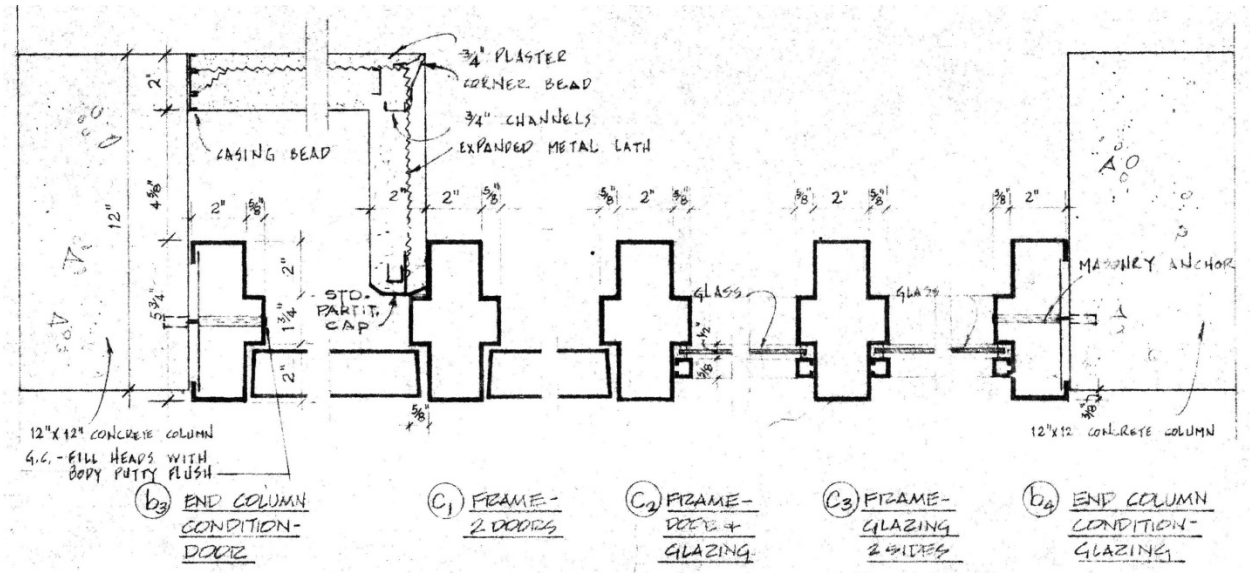


Figure H-33: Typical steel-framed door and fixed lite assembly details. [*From 1968 Drawing A-22.*]

10. Acoustical Tile Ceilings and Plywood Fascias:

Tectum form plank integral with the cast-in-place floor and roof slabs, was originally installed as the finished ceiling surface at classrooms, cafeteria, and part of the Media Center. A different composition of Tectum acoustical ceiling panels was installed in a metal grid suspended below the existing concrete structure at the corridors, the Main Administration area, portions of the Media Center, and toilets and offices off the corridors. The suspended Tectum acoustical ceiling panels were not in contact with PCB-containing mastics associated with the Tectum form plank. Nevertheless, EnviroScience measured PCB concentrations in suspended Tectum

acoustical ceiling panels at >1 ppm, possibly indicating contamination through the air and/or dust.

Plywood fascias were typically constructed to accommodate the transition in ceiling height from areas with Tectum form plank to areas with suspended acoustical ceiling panels. They were also constructed above a number of interior steel framed door and fixed lite assemblies and where suspended ceilings intersect with exterior windows.

[See Large Format Drawings 5A and 5B for locations of proposed suspended acoustical ceiling systems and fascia assemblies.]

Removal:

a. All suspended acoustical ceiling panels should be removed and disposed of as PCB Remediation Waste. CGKV recommends removal of the existing suspended metal grid as well; its reuse might not be compatible with currently available acoustical ceiling tiles. The work would also require removal and reinstallation of surface-mounted or recessed items such as lighting fixtures, HVAC registers, smoke detectors, fire alarm devices, speakers, and exit signs.**
   i. Quantity: Remove, and subsequently replace, complete suspended acoustical ceiling tile system = approximately 29,800 SF total.
   ii. Quantity: Remove, and subsequently reinstall, ceiling-mounted fixtures and devices = [allowance].

b. CGKV also recommends removal, and subsequent reconstruction, of plywood fascias at transitions in ceiling height.**
   i. Quantity: Remove, and subsequently replace, plywood fascia assemblies, 145 LF x 1'-0" high (average) = approximately 145 SF total.
   ii. Quantity: Remove, and subsequently replace, plywood fascia assemblies, 833 LF x 3'-0" high (average) = approximately 2,500 SF total.
   iii. Quantity: Remove, and subsequently replace, plywood fascia and soffit assemblies at windows, 261 LF x 1'-0" high x 1'-0" deep (average) = approximately 522 SF total.

Encapsulation:

c. The highly textured surface of the existing suspended Tectum ceiling panels would be difficult to paint, and CGKV does not recommend encapsulation as an effective alternative to removal.

d. Plywood fascias can be encapsulated with an epoxy coating.
   i. Quantity: Paint plywood fascias with epoxy coating = approximately 3,167 SF total.

Figure H-34: Acoustical tile ceiling and plywood fascia at Media Center.

11. Interior Floors:

Most interior carpeting at Westport Middle School was removed during the 2011 PCB Source Removal Project and replaced with vinyl composition tile (VCT). Other areas of the building typically have older VCT or vinyl asbestos tiles (VAT) from the original construction. Wood flooring can be found at the Lower Level in rooms 101 through 107. According to USEPA research, all of these flooring materials can act as PCB sinks and become contaminated. [EnviroScience indicated that polyurethane used to seal wood floors should be investigated to determine if it might be a source of PCBs.] To CGKV's knowledge, none of these flooring materials has yet been sampled and tested. If test results indicate PCBs >1 ppm, these materials should be replaced. [The September 2011 AHERA Report for Westport Middle School also identifies existing floor tile and mastic to be asbestos-containing building materials.]

Wood sports flooring is prevalent throughout the Gymnasium, and the Auditorium is almost entirely carpeted. This Study does not consider replacement of these flooring

materials necessary at this time because these spaces did not register high concentrations of PCBs in the air.

EnviroScience tested mastics associated with vinyl cove base and found PCB concentrations >50 ppm. This mastic is likely to be a PCB Bulk Product, and the wall surfaces behind vinyl base are probably contaminated. [The September 2011 AHERA Report for Westport Middle School also identifies resilient base and mastic to be asbestos-containing building materials.]

Removal:

a. If existing VCT or VAT is found to be contaminated with PCBs >1 ppm, it should be removed, including all mastics, and replaced with new VCT.**
   i. Quantity: Remove, and subsequently replace, existing VCT and VAT = approximately 89,500 SF total.

b. If existing wood floors in the area of rooms 101 through 107 are found to be contaminated with PCBs >1 ppm, they should be removed and replaced with new plywood underlayment and VCT.**
   i. Quantity: Remove existing wood flooring and subsequently replace with new plywood underlayment and VCT = approximately 5,500 SF total.

c. All existing resilient base throughout the building should be removed, including mastics, and replaced with new resilient base. This work might require decontamination of the bottoms of walls directly in contact with PCB-contaminated mastic.**
   i. Quantity: Remove, and subsequently replace, existing resilient base = approximately 12,000 LF total.

Encapsulation:

d. CGKV is not aware of any feasible means by which resilient flooring or base materials may be encapsulated.

e. CGKV does not know if there are any acceptable means of encapsulating wood floors.

Figure H-35: Existing VCT / VAT; note wear.

Figure H-36: Existing wood floor at Lower Level Classroom 105.

12. Miscellaneous Interior Items:

There are a number of miscellaneous interior surfaces, materials, and assemblies at Westport Middle School that are either known to be contaminated with PCBs (through testing) or can be assumed to be contaminated with PCBs (through comparison with USEPA research identifying similar building materials as PCB sinks). Interior items deserving consideration include, but are not limited to, the following.

Miscellaneous Interior Caulk

Removal:

a. EnviroScience sampled and tested some interior caulk around an air conditioner sleeve at one of the offices in the Main Administration area. This caulk is known to be less than ten years old and therefore not an original PCB Bulk Product, yet it contained PCBs in concentrations >50 ppm. This finding strongly suggests that practically any interior caulk can be contaminated with PCBs. This Study is unable to quantify miscellaneous interior caulk. Further surveying, sampling, and testing will be required.**

Encapsulation:

b. Miscellaneous interior caulk joints must first be identified before possible methods of encapsulation can be considered. Removal of such caulk joints would most likely be recommended.

Interior Folding Partitions

Removal:

c. The make-up of the movable folding partitions at some classrooms is unknown. Their removal is already proposed as part of the work to remove remaining Tectum form plank above soffit areas, described in Section G.3.g, above.

Encapsulation:

d. There is no recommended method for encapsulation of interior folding partitions.

Interior Wood Rails and Trim

Removal:

e. USEPA Researchers identified wood flooring as a PCB sink. By extension, any interior wood material may be porous to a degree allowing contamination with PCBs through the air or dust. Wood trim associated with removal and replacement of exterior windows is already proposed to be replaced in Section G.2.c, above; wood trim at the tops of interior steel stud and plaster partitions is proposed to be replaced in Section G.3.e, above; rails that are a part of typical fixed lite assemblies are proposed to be replaced (or encapsulated) in Section H.9, above; and wood fascias associated with transitions in ceiling height / material are proposed to be replaced (or encapsulated) in Section H.10, above. Other remaining interior wood trim can be found at protective railings at stairways. These wood railings can be removed and replaced.**

   i. Quantity: Remove, and subsequently replace, wood panel guardrails / handrails at stairways = approximately 175 LF total.
   ii. Quantity: Remove, and subsequently replace, wall-mounted wood handrails at stairways = approximately 200 LF total.
   iii. Quantity: Remove existing 2x8 wood handrails and replace with guardrails / handrails at stairways = approximately 60 LF total.

Encapsulation:

f. It may be possible to encapsulate existing wood rails at stairways with epoxy paint. However, since these building components are intended to be handled by building occupants, it may be preferable to replace them.

i. Quantity: Encapsulate wood panel guardrails at stairways with epoxy paint, 175 LF x 2'-0" high (average) x 2 sides = approximately 750 SF total.

ii. Quantity: Encapsulate wood handrails at stairways with epoxy paint = approximately 260 LF total.

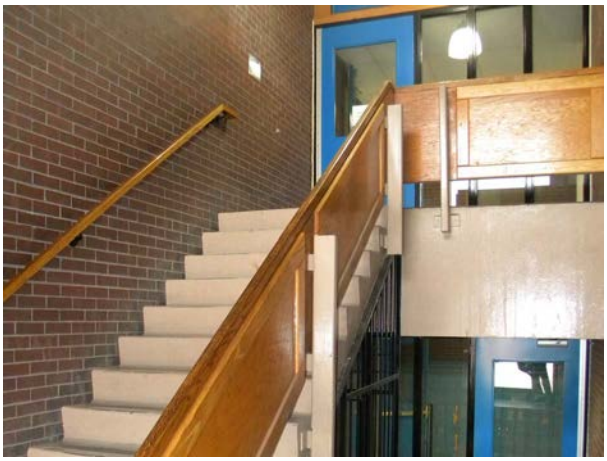


Figure H-37: Wood guardrails and handrails at stairway.

Chalkboards, Tack Boards, and White Boards

Removal:

g. The degree to which interior chalkboards, tack boards, or white boards may be contaminated with PCBs has not been evaluated. Removal and replacement of these visual display boards may be warranted.**

i. Quantity: Remove, and subsequently replace, 133 visual display boards x 42.5 SF each (average) = approximately 5,650 SF total.

Encapsulation:

h. Some methods of resurfacing existing visual display boards may serve as an acceptable encapsulant, but CGKV does not recommend this approach.

Interior Casework

Removal:

i. USEPA determined that medium density fiberboard and laminated countertops, common materials used in the fabrication of interior casework, can act as PCB sinks. Possible contamination of existing casework at

Westport Middle School has not yet been studied. Removal might be advised if supported by confirmation of contamination.**

i. Remove, and subsequently replace, base cabinets with countertop (average) = approximately 930 LF total.

Encapsulation:

j. CGKV does not recommend encapsulating existing interior casework through epoxy painting or replacement of plastic laminates.

Figure H-38: White board installed over original chalkboard in classroom.

Figure H-39: Existing interior casework in Classroom 268.

Metal Lockers

Removal:

k. Metal lockers are typically factory-painted. It is not known whether factory paint is susceptible to contamination with PCBs. There is evidence to suggest that many of the lockers at Westport Middle School were field painted at some point after their initial installation. Possible contamination of metal lockers must still be confirmed prior to undergoing a project to remove and replace them.**

i. Quantity: Remove, and subsequently replace, typical corridor lockers x 670 LF x 5'-0" height (average) = approximately 670 LF total.

ii. Quantity: Remove, and subsequently replace, gymnasium (locker room) lockers x 370 LF x 5'-0" height (average) = approximately 370 LF total.

Encapsulation:

l. Existing metal lockers are in generally poor condition, and encapsulating them with an epoxy paint is not recommended.

i. Quantity: Encapsulate existing metal lockers, outside and inside, with epoxy paint x 1,040 LF x 5'-0" height (average) = approximately 1,040 LF total.

Figure H-40: Existing metal corridor lockers.

[Page left intentionally blank.]

I. RECOMMENDED FACILITY IMPROVEMENTS

As discussed above, mandatory or recommended work to remove or encapsulate remaining PCB Bulk Products and PCB Remediation Wastes will likely be pervasive throughout Westport Middle School, and can result in significant improvements to building systems and finishes. For example, removal of PCB-containing glazing compound at the exterior windows requires removal of the complete window system. A new window system will provide dramatically improved energy efficiency.

A project to continue the on-going use of the building as a middle school should also consider other possible facility improvements that are not directly related to dealing with PCBs. The substantial effort to address the immediate concerns of hazardous materials abatement can be coupled with a more comprehensive long-term investment in the building as a whole. Some recommended facility improvements to consider follow.

1. Building Envelope:

The replacement of all **exterior windows and doors** with modern, thermally improved systems was identified as a priority at Westport Middle School in 2010, and was the intended scope for the 2011 MSBA Green Repair Program project. Removal of remaining PCB Bulk Products necessitates removal and replacement of window system components in their entirety (see G.2). Similarly, the recommended scope to eliminate PCB Remediation Wastes at exterior door masonry openings provides the beneficial opportunity to replace the building's original exterior door assemblies (see G.1). MSBA's current Accelerated Repair Program provides reimbursement for approved window and door replacement projects.

The existing **roof system** is a ballasted EPDM system installed ca. 1990, with some seam repair work performed in 2009. The expected lifespan of an EPDM roof system is 20-25 years. Complete replacement of the current roof system can include improved vapor resistance, increased insulation thicknesses, and the installation of a more durable, energy efficient membrane system. Possible extensive modifications to or replacement of rooftop HVAC equipment (discussed below) would also be easier with replacement of the roof system. The Accelerated Repair Program also provides funding for approved roof replacement projects.

a. The existing roof system should be removed in its entirety down to the existing concrete deck. A new system would include vapor retarder, rigid insulation (minimum 4" thickness), cover board, and single-ply membrane. Membrane options include EPDM, TPO, and PVC.

i. Quantity: Remove existing ballasted EPDM roof system and provide complete new single-ply membrane system = approximately 60,000 SF total.

The existing **exterior brick veneer walls** are in generally good condition. However, there are very few control joints within some long expanses of brick, especially near outside corners. Expansion and contraction of the exterior walls has resulted in a number of cracked joints, cracked bricks, and displaced bricks. An extensive renovation of Westport Middle School should consider repairs to exterior brick veneer walls.

b. Repairs to exterior brick veneer walls can include repointing, brick replacement, and even the installation of added control joints near outside corners. This study does not include a detailed survey of exterior brick repairs. Estimates, though, are as follows.
   i. Quantity: Repoint existing brick at cracked mortar joints = approximately 1,500 SF total.
   ii. Quantity: Replace existing cracked, damaged, or displaced bricks = approximately 500 SF total.
   iii. Quantity: Cut brick and install new control joints at outside corners at 32 locations x 22 LF each = approximately 704 LF total.

Figure I-01: Displaced brick veneer at outside corner.

Figure I-02: Cracked joints and split brick at outside corner.

2. Interior Finishes:

Mandatory and recommended work to address remaining PCB Bulk Products and PCB Remediation Wastes at the building interior could result in the beneficial replacement or re-finishing of nearly all interior surfaces at Westport Middle School.

Most existing suspended (Tectum) ceilings are from the original construction. They are dingy and generally due for replacement. There is also a significant quantity of original VCT/VAT flooring, which is showing noticeable wear in some areas. Replacement of suspended ceilings and resilient flooring and base throughout the school would be a wise investment in the school's long-term use. Adoption of mandatory and recommended work described in Sections G and H above leaves few, if any, **interior finishes** in need of replacement.

One exception to the replacement or refurbishment of interior finished surfaces concomitant with removal of PCBs and contaminated materials remains at classroom, cafeteria, library, and similar ceilings where Tectum form plank was removed (see Section C.5). The ceilings in these locations are currently exposed concrete with a painted encapsulant finish. The hard ceilings, walls, and floors create a cacophonous environment very much detrimental to the process of teaching and learning. Proper control of **classroom acoustics** is paramount.

a. One approach to improving the acoustical performance in classrooms and similar spaces with currently exposed concrete ceilings would involve **adhering some kind of acoustical panels** directly to the concrete. This approach would generally recreate the visual and acoustical effect of the original Tectum form plank ceilings and would maintain the generally high (10'-8") ceilings heights. If PCB Remediation Wastes are not removed from the concrete, and the long term solution involves encapsulation, then careful consideration must be given to the role of the adhered acoustical panels with regard to on-going monitoring.
   i. Quantity: Adhere acoustical tile panels to existing exposed concrete ceilings = approximately 54,200 SF total.

b. A second approach would be to **install acoustical ceiling tiles in a conventional suspended metal grid**, similar to the replacement of suspended ceilings discussed in Section H.10. Suspended ceilings may be installed to within 6" of the existing concrete ceilings, thus leaving concrete beams exposed and providing a higher finished ceiling similar to the original design, or they may be installed below the beams, at a height of between 8'-0" and 9'-0", thus allowing the concealment of new pipes, conduit, ducts, or cable that might be installed as part of a major renovation project. The suspended acoustical ceiling allows easier visual monitoring of the encapsulated concrete ceiling above.
   i. Quantity: Install suspended acoustical tile ceiling system below existing exposed concrete ceilings = approximately 54,200 SF total.

Figure I-03: Existing exposed concrete ceiling at classroom.

[See Large Format Drawings 5A and 5B for locations of proposed acoustical ceiling treatments at exposed concrete ceilings.]

3. Fixtures, Furnishings, and Equipment:

Sections G and H of this Study propose replacement of the majority of fixtures, furnishings, and equipment in the building if they are confirmed to include PCB Remediation Wastes. Most of these items are from the building's original construction. **Metal lockers** at corridors and locker rooms have seen considerable abuse and damage over the years. Even if lockers are found to be PCB-free, their replacement with new lockers would be a recommended improvement. Wood and laminate-clad **casework** is in generally fair condition, and replacement does not appear to be necessary at this time unless PCBs are present. Over the years, the majority of original chalkboards in the school have been covered by dry-erase white boards. If existing **visual display boards** are found to be contaminated and in need of replacement, the school will have the opportunity to determine where white boards versus chalkboards are preferred, and could integrate newer display technologies such as smart boards. Absent a mandate to replace chalkboards due to PCBs, however, the existing visual display boards throughout the school are in generally good condition and not in imminent need of replacement.

Figure I-04: Damaged original corridor lockers. Note that the original finish was subsequently painted over.

Figure I-05: Damaged original boys' locker room lockers, also repainted.

4. Auditorium:

Air sample results within the existing auditorium space at Westport Middle School did not show any elevated concentrations of PCBs in that space. No materials or surfaces inside the auditorium were identified as PCB Bulk Products or PCB Remediation Wastes. The auditorium would benefit from some cosmetic improvements, however. **Seating upholstery** is probably original and is worn, and the seat springs and suspension are uncomfortable. **Carpeting** is beginning to show wear and is loose and wrinkling in some areas.

a. Elective improvements to the auditorium space could include replacement of seating and replacement of carpeting.
   i. Quantity: Replace auditorium seating = approximately 402 seats total.
   ii. Quantity: Replace auditorium carpeting = approximately 5,000 SF (including risers) total.

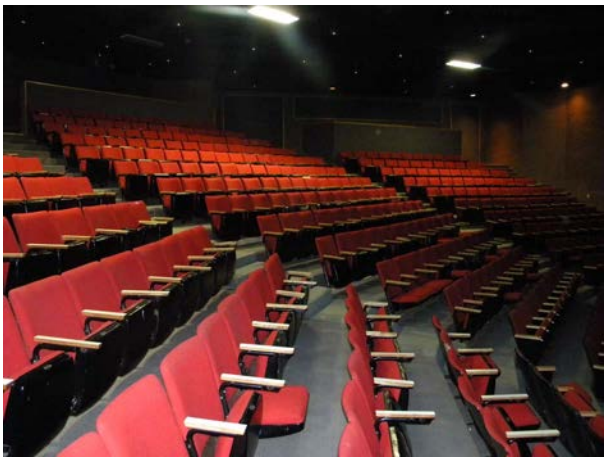


Figure I-06: Existing auditorium.

Figure I-07: Worn auditorium seating upholstery.

5. Accessibility:

A major renovation project at Westport Middle School will likely trigger a requirement for significant improvements to accessibility throughout the building and school site, as discussed in Section J of this Study. Even beyond regulatory mandates, however, we believe the Town of Westport should devote itself to improving the environment for persons with disabilities.

6. Site:

With the exception of concrete walkways and lawns immediately adjacent to the building (see Sections H.3 and H.4), the exterior site at Westport Middle School is little affected by the presence of PCB-containing and PCB-contaminated building materials (though caulking at sidewalks and brick walls around the site have not been tested for PCBs). Some further site improvements, however, can improve the appearance of the school and the maintainability of exterior features.

Exterior solid brick walls are found at the main loading dock and at various ramps and bridges leading to building entrances. Many of these brick walls show considerable efflorescence, which is the white, powdery deposit of water-soluble salts left on the surface of the masonry. There are also many areas where brick walls are cracked and spalling due to the effects of freeze-thaw cycles. Removal and reconstruction of these exterior brick structures should be a consideration. It is likely that the existing underlying concrete foundations can be left and re-used to support the new walls.

a. Remove and reconstruct exterior solid brick walls, 12" deep, and replace steel handrails at exterior ramps.

i. Quantity: Remove and reconstruct exterior solid brick walls x 12" thick = approximately 3,100 SF total.

ii. Quantity: Remove and replace exterior steel handrails (upper and lower) at exterior ramps = approximately 120 LF total.

Figure I-08: Efflorescence at exterior brick walls to loading dock.

Figure I-09: Efflorescence at exterior brick walls at entrance ramp.

7. Mechanical Systems:

Much of the school's mechanical infrastructure is original and dates to the late 1960s. Though very well maintained, many system components have reached or exceeded their expected lifespans.

The existing plumbing system was not examined in detail during this Study. CGKV was not apprised of any deficiencies with plumbing items. Possible work to create accessible facilities would include new or renovated toilet rooms, replaced drinking fountains, and improved work sinks. [See Section J for additional information.]

CGKV's Mechanical Engineer, Fitzemeyer & Tocci Associates (F&T), conducted a review of the existing HVAC infrastructure. Their detailed report can be found at the end of this Section I. Some HVAC upgrades for consideration include the following; they are listed in order of recommendation.

a. **Unit ventilators** (both floor and ceiling mounted) typically provide fresh tempered air to classrooms, and large **air handlers** supply spaces such as the gymnasium, auditorium, and locker rooms. All of this equipment appears to be original. Ceiling mounted equipment is installed directly to the underside of remaining Tectum form plank which, with the associated PCB-containing mastics, must be removed as PCB Bulk Product Material. As

discussed in Section G.3.f, removal of the remaining Tectum form plank requires the removal and subsequent reinstallation of the mechanical equipment. Instead of reinstalling old unit vents and air handlers, the opportunity presents itself to install new equipment that will perform better, provide improved energy efficiency, and operate for another 25 years or more.

i. Quantity: Replace all unit ventilators and air handlers x 115,000 gross SF x $9.50 to $13.00 per SF = approximately $1,092,500 to $1,495,000.

b. **Hot water piping and finned tube radiators** circulate hot water from the boilers and are the principal heat source for classrooms and other areas of the building. The steel piping has reached its normal life expectancy of 35 to 45 years. Proposed work to remove PCB Remediation Waste at interior brick veneer at Upper Level perimeter walls associated with Type 'B' windows requires the removal and reinstallation of pipes and finned tube radiation (see Section H.7.a). As with the unit ventilators, it may be advisable to replace and re-insulate the existing piping and fin tubes here and throughout the building. [Much interior piping includes asbestos insulation that can be removed as part of a replacement project.]

i. Quantity: Replace and insulate all hot water piping x 115,000 gross SF x $5.00 to $7.50 per SF = approximately $575,000 to $863,500.

Figure I-10: Existing ceiling mounted unit ventilator. (Note: Photo is from before 2011 PCB Removal Project.)

Figure I-11: Existing finned tube radiation at perimeter walls.

c. Another improvement that will provide better control and energy efficiency would be the installation of a new **direct digital control building automation system**.

i. Quantity: Replace existing controls with new DDC system x 115,000 gross SF.

d. Existing **roof fans** can be replaced and associated **ductwork** repaired.
   i. Quantity: Replace roof fans and repair ductwork x 115,000 gross SF.

e. The existing **hot water circulation pumps** are original but well-maintained. Their replacement may be considered.
   i. Quantity: Replace hot water pumps = approximately $20,000 to $25,000.

f. If Westport Middle School undergoes a major, gut renovation, then an entirely **new, high efficiency, state-of-the-art HVAC system** should be considered.
   i. Quantity: Replace HVAC system in its entirety x 115,000 gross SF.

8. Electrical Systems:

CGKV is not aware of major deficiencies with the building's **electrical, data, and communications systems**, and this Study did not investigate the matter in detail. A common complaint at school buildings, however, is that there simply is not enough infrastructure to serve increasingly sophisticated technologies.

f. If Westport Middle School undergoes a major, gut renovation, then an entirely new, state-of-the-art electrical, data, and communications system should be considered.
   i. Quantity: Replace electrical, data, and communications system in its entirety x 115,000 gross SF.

FITZEMEYER & TOCCI ASSOCIATES, INC.

Memo

92 MONTVALE AVENUE, SUITE 4100
STONEHAM, MA 02180
(P) 781.481.0210 (F) 781.481.0203 (W) www.f-t.com

DATE:	August 28, 2013
TO:	Jason Knutson
FROM:	Stephen Montibello
RE:	Westport Middle School HVAC Evaluation
F&T PROJ. NO.	130039.01

We have inspected the existing HVAC infrastructure conditions at the above captioned project.

The summary below outlines the general configuration and condition of the existing systems. We have also included recommendations for re-using the system to the extent possible and allow the continuing and long term use of the school.

Heating Plant:

Configuration: The school heat plant consisting of three (3) Weil-McLain cast iron hot water boilers installed circa 1999. Each boiler produces 3800 MBH of heating. The boilers are equipped with dual fuel natural gas and oil power flame burners. It was reported that the school only uses natural gas at this time.

Hot water from the boilers is circulated throughout the school via 4 base mounted centrifugal pumps. While the pumps are original to the building, they have reportedly been rebuilt and equipped with variable speed drives. The motors have also been replaced within the last 3 years. The pumps are configured to provide heating to three (3) zones of the school. The fourth (4^{th}) pump operates as a swing backup pump. Hot water is delivered throughout the school in 4 inch schedule 40 steel supply and return piping loops. The piping within the boiler room is 6 inch schedule 40 steel. The boilers also serve two (2) domestic hot water heaters.

Condition: The boilers are in good condition consistent with the age of the equipment and have a useful life expectancy of 20-30 years. The pumps appear to be in good condition.

Adequacy: The existing primary heating equipment, including boilers, pumps, and piping systems are adequate for support of the existing space functions. The school is approximately 115,000 sf and the total boiler capacity is approximately 99 BTUH/SF. Schools of this type typical operate at 40-60 BTU/SF. Therefore we expect that one of the boilers operates as stand-by for backup.

Recommendations:

- Install a new direct digital control facilities automation system to control the plant and terminal equipment.
- Continue to maintain the boiler plant and systems to prolong life to the extent possible.
- Have sections of piping tested for integrity to determine if long term re-use is feasible. Life Expectancy for piping can be tested with Ultrasound to determine surface roughness, scale, and remaining usable pipe thicknesses.
- Re-use and re-configure hydronic heating system to the extent indicated further below.
- Replace plant, pumps and entire piping system if part of a major building renovation.

FITZEMEYER & TOCCI ASSOCIATES, INC.

Memo

92 MONTVALE AVENUE, SUITE 4100
STONEHAM, MA 02180
(P) 781.481.0210 (F) 781.481.0203 (W) www.f-t.com

Boiler Plant

Hot Water Pumps

Cooling:

Configuration: Space cooling is provided in select locations within the school. Cooling is provided by split system air conditioning systems consisting of an indoor air handling unit with an associated roof mounted air cooled condensing unit.

Condition: The roof mounted air cooled condensing units appear to be fairly new and are in good physical condition. These units have a typical life expectancy of 10-15 years.

Recommendations:

- Maintain units to extend life to the extent possible.
- Replace only if part of a major renovation project.

FITZEMEYER & TOCCI ASSOCIATES, INC.

Memo

92 MONTVALE AVENUE, SUITE 4100
STONEHAM, MA 02180
(P) 781.481.0210 (F) 781.481.0203 (W) www.f-t.com

Roof Mounted AC Units

Ventilation, Exhaust, and Air Distribution:

Configuration: Heating and Ventilation throughout the school is predominately provided by approximately sixty (60) unit ventilators. The unit ventilators are installed in three configurations: 1) floor mounted exposed, 2) ceiling mounted exposed, 3) ceiling mounted concealed. The units are typically installed within the room they serve and have minimal ductwork. The typical unit intakes outdoor air for ventilation via a dedicated wall intake louver. The unit ventilation design includes an air-side economizer which provides "free" cooling when outside temperatures permit.

Larger spaces such as the Gym, Auditorium, and Locker Rooms are served by approximately six (6) air handling units. These units provided heating and ventilating to the space served via a low velocity duct system.

Ventilation air brought in by the unit ventilators is then exhausted via numerous roof mounted general exhaust fans. In addition to the general exhaust fans there are several toilet room exhaust fans. Air is ducted to the twenty-nine (29) exhaust fans via low velocity ductwork systems.

Condition: The system ductwork is located within the building ceiling cavity and should be in fair condition. The roof fans are in poor condition and have exceeded the useful life expectancy of 20-25 years. Unit ventilators are in poor condition and have exceeded the life expectancy of 20-25 years. Unit ventilators likely will not pass the code requirements for outside air intakes because the coils are likely to have become plugged over time and tough to clean .

Recommendations:

Re-use most of the existing duct system and reconfigure as required.

- All re-used ductwork should be cleaned, leak tested, and repaired as required.

FITZEMEYER & TOCCI ASSOCIATES, INC.

Memo

92 MONTVALE AVENUE, SUITE 4100
STONEHAM, MA 02180
(P) 781.481.0210 (F) 781.481.0203 (W) www.f-t.com

- Replace existing roof fans
- Replace existing unit ventilators
- If part of a major renovation, consider an entirely different HVAC system type such as new condensing heating hot water boilers, central energy recovery units (ERUs), DX Air handlers for assembly spaces, electrically commutating motors, CO2 demand limiting ventilation, new DDC system, modular split system DX cooling, or possibly variable refrigerant flow systems. While every school project should include condensing boilers and ERUs it is not quite as easy to determine what system type to choose for cooling. Further analysis is beyond the scope of this report.

Floor Mounted Exposed Unit Ventilator

Ceiling Exposed Unit Ventilator

Ceiling Concealed

Roof Exhaust Fans

FITZEMEYER & TOCCI ASSOCIATES, INC.

Memo

92 MONTVALE AVENUE, SUITE 4100
STONEHAM, MA 02180
(P) 781.481.0210 (F) 781.481.0203 (W) www.f-t.com

Cost Considerations:

The following are anticipated rule of thumb costs for upgrading the system. These costs are very preliminary and should be used for order of magnitude comparison only.

- Replace Unit Ventilators and Air Handlers: $9.50 - $13.00 $/sf
- Replace hot water piping and insulate: $5.00 - $7.50 $/sf
- Add Direct Digital Control Building Automation System: $4.00 - $5.00 $/sf
- Replace roof fans and repair ductwork $2.00 - $3.00 $/sf
- Replace Hot water pumps $20,000 - $25,000

If the school undergoes a major renovation and all existing systems were replaced, the cost of an entirely new high efficiency state of the art system would be $25.00 - $35.00 $/sf

J. POSSIBLE MANDATED FACILITY IMPROVEMENTS

State or Federal laws, statutes, regulations, and/or codes might mandate additional facility improvements unrelated to the building modifications required (or recommended) to address remaining hazardous materials at Westport Middle School and/or facilitate its on-going use.

1. Accessibility Improvements

The Federal Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board (MAAB, 521 CMR) establish standards for accessibility in and around buildings.

The ADA was signed into law on July 26, 1990. It is one of America's most comprehensive pieces of civil rights legislation that prohibits discrimination and guarantees that people with disabilities have the same opportunities as everyone else to participate in the mainstream of American life – to enjoy employment opportunities, to purchase goods and services, and to participate in State and local government and services. Modeled after the Civil Right Act of 1964, the ADA is an "equal opportunity" law for people with disabilities.

The MAAB is a regulatory agency within the Massachusetts Office of Public Safety. Its legislative mandate states that it shall develop and enforce regulations designed to make public buildings accessible to, functional for, and safe for use by persons with disabilities. To carry out the Board's mandate, the "Rules and Regulations", which appear in the Code of Massachusetts Regulations as 521 CMR 1.00, have been developed and amended over the years. These regulations are incorporated into the Massachusetts State Building Code as a "specialized code", making them enforceable by all local and state building inspectors, as well as by the Board itself. "It is the intent of 521 CMR to provide persons with disabilities full, free and safe use of all buildings and facilities so that all such persons may have the educational, living and recreational opportunities necessary to be as self-sufficient as possible and to assume full responsibilities as citizens" (521 CMR 2.2).

All work performed on public buildings in Massachusetts, including construction, alterations, additions, and change of use, is required to conform to the standards of 521 CMR. If the work performed at an existing building amounts to 30% or more of the full and fair cash value of the building, then the entire building is required to comply with the accessibility standards of 521 CMR as if the building were being newly constructed (521 CMR 3.3). Full and fair cash value is defined as the assessed valuation of the building (not including the land) as recorded in the Assessor's Office

of the municipality. Per Westport Community Schools, the current assessed value of Westport Middle School is $5,540,600. The expenditure of $1,662,000 in construction costs (over a three year period), therefore, would trigger the mandate for full compliance with 521 CMR throughout the building and site.

[There are several categories of "exempted work", including hazardous materials abatement (as a stand-alone project), roof replacement, and window replacement, that do not count towards the total value of work performed, but only if those categories of work do not exceed $500,000. As discussed elsewhere in this Study, hazardous materials abatement, roof replacement, or window replacement work at Westport Middle School will almost certainly exceed $500,000 and would therefore not be exempt.]

In 2010 / 2011, the Institute for Human Centered Design (IHCD) conducted an investigation and prepared an "ADA Compliance Plan 2010" for Westport Middle School. The existing facility was found to be significantly lacking in accommodations for persons with disabilities. Per the IHCD Compliance Plan, building and site elements not complying with ADA and/or MAAB standards include, but are not limited to:

- Accessible parking, signage, and passenger loading zones are inadequate.
- Curb ramps are missing or exceed maximum slope tolerances.
- Walkways around the school are not continuous, have improper changes in height, and/or exceed the 2% cross slope limit.
- Signage does not direct visitors to the accessible entrance.
- Exterior intercoms (for communicating with administrative personnel) are not on an accessible route.
- The boys' and girls' locker rooms, including shower facilities, are inaccessible.
- There are no accessible restrooms open to student use.
- The nurse's restroom is inaccessible.
- The Auditorium lacks accessible seating and companion seating.
- There are no accessible routes to the band room and music room.
- There are protruding objects interfering with accessible routes.
- Drinking fountains are not accessible.
- Interior signage is generally missing or installed in the wrong location, and typically lack raised characters and Braille.
- Handrails at stairways are non-compliant.
- Several doors do not comply with width or clearance requirements, and most do not have accessible hardware.
- Places of assembly do not have assistive listening devices.
- Classroom sinks and lab stations are not accessible.

- There is not an accessible route from the auditorium to the stage.

The IHCD Compliance Plan for Westport Middle School does a fine job of providing a qualitative description of accessibility deficiencies, and provides input on what sorts of improvements would be required. The Plan includes unit cost ranges for a number of individual compliance solutions, but it does not provide a definitive quantification of the issues, and does not calculate an overall estimate for the cost of accessibility upgrades at Westport Middle School.

The MAAB includes a process whereby a building owner who thinks that full compliance with 521 CMR is impracticable may apply to the Board for a variance. Variances may be granted where the Board finds that full compliance would result in excessive and unreasonable costs without any substantial benefit to persons with disabilities or where full compliance would be technologically unfeasible.
In its current condition, Westport Middle School clearly presents many barriers and challenges to persons with disabilities, and any extensive project to alter the building must include accessibility improvements. The scope and cost of those improvements cannot be accurately determined without a detailed accessibility survey, explicit quantification of the existing deficiencies and proposed solutions, and collaboration with the MAAB as part of their variance process. These steps are beyond the scope of this current Feasibility Study.

2. Structural / Seismic Upgrades

Any renovation project at Westport Middle School must comply with the requirements of the Massachusetts State Building Code. Requirements vary based on the proposed scope and extent of work. The building's structural design may need to be studied in detail to ensure that seismic and lateral bracing is sufficient. The extent of possible structural improvements cannot be determined at this time without identification of the scope for an actual construction project and detailed engineering and analysis.

3. Automatic Sprinkler System

Westport Middle School is not currently equipped with an automatic sprinkler system. Massachusetts General Laws and Regulations establish requirements for the installation of an automatic sprinkler system in existing buildings.

780 CMR: Massachusetts State Building Code

The International Existing Building Code (IEBC) 2009, with Massachusetts Amendments, governs work at existing buildings such as Westport Middle School.

In accordance with 101.5 of the IEBC, the repair, alteration, change of occupancy, addition, or relocation of all existing buildings shall comply with either the Prescriptive Compliance Method, or the Work Area Compliance Method, or the Performance Compliance Method. These methods basically establish the manner in which compliance with the Code is achieved based on the scope of a particular construction project.

The Prescriptive Compliance Method does not require the installation of a new automatic sprinkler system, and it is unlikely that proposed modifications for the on-going use of Westport Middle School would be designed and constructed under the Performance Compliance Method. The remaining option, the Work Area Compliance Method, is sub-divided into Level 1, Level 2, and Level 3. Based on the discussion contained in this Study, it is most likely that a project to modify or renovate Westport Middle School would be considered a Level 2 Alteration.

Sprinkler protection is only required to be added under the Work Area (Level 2 Alteration) Compliance Method if the work area (i.e. – the area of reconfigured spaces) on any floor exceeds 50% of that floor area. Unless the majority of interior spaces are reconfigured as part of a significant renovation project – a project scope not advocated by this Study – 780 CMR would not require the installation of a new automatic sprinkler system at Westport Middle School. That being said, any proposed project to modify or renovate Westport Middle School should be reviewed with the Local Building Official to confirm the status of sprinklers.

MGL Chapter 148 Section 26G

Massachusetts General Laws Chapter 148 Section 26G applies to the installation of automatic sprinkler systems in non-residential buildings. This law is principally enforced by the Local Fire Official, and the Massachusetts Fire Safety Commission's Automatic Sprinkler Appeals Board (the Board) issued a Memorandum dated October 14, 2009 clarifying the law. For existing buildings larger than 7,500 gross square feet, the law only requires the installation of sprinkler systems when there is an addition or the building undergoes a "major alteration". The Board considered factors established in a 2009 Appellate Court case to determine whether "major" alterations or modifications are proposed, thus requiring sprinklers to be installed throughout a building. Those factors include evaluating the nature of the actual work and looking at the cost/benefit of sprinkler installation. The following Figure J-01 presents the Boards intention, taken directly from the October 14, 2009 advisory memo:

A. What is the nature of the actual work?

- Is the planned physical work the type of work that would make the effort to install sprinklers substantially less than it would have been if the building were intact?

- Is the work merely minor repairs or cosmetic vs. major alterations? Examples of "major" alterations or modifications, include, but may not be limited to:

  - The demolition or reconstruction of existing ceilings or installation of suspended ceilings;

  - The removal and/or installation of sub flooring, not merely the installation or replacement of carpeting or finished flooring;

  - The demolition and/or reconstruction or repositioning of walls or stairways or doorways; or

  - The removal or relocation of a significant portion of the building's HVAC, plumbing or electrical systems involving the penetration of walls, floors, or ceilings.

B. What is the scope of the work or cost/ benefit of sprinkler installation?

This involves a review of the scope of the major alterations or modifications. Does it affect a substantial portion of the building? This requires a review to determine how much of the building is being affected by the work; or a determination that the cost of installing sprinklers is moderate in comparison to the total cost of the work.

To assist fire officials, building owners and construction project managers in making decisions, the Board has established the following two presumptions that may be used to determine if the scope or the cost of the planned alterations or modifications are "major" thus requiring sprinklers to be installed throughout a building.

1) Major alterations or modifications are reasonably considered major in scope when such work affects thirty-three (33) % or more of the "total gross square footage" of the building, calculated in accordance with section 26G.

2) Major alterations or modifications are reasonably considered major in scope or expenditure, when the total cost of the work (excluding costs relating to sprinkler installation) is equal to or greater then thirty-three (33) % of the assessed value of the subject building, as of the date of permit application.

It is the conclusion of the Board, at this time, that if the nature of the work is the type of work described in A and also meets at least one of the two presumptions described in B above, then it can be reasonable to conclude that the alterations or modifications are "Major", thus requiring sprinklers

throughout the building.

The Board is aware that buildings and circumstances vary from one project to another and that it would be unreasonable to expect that a single set of criteria could reasonably apply to all situations. Therefore, this list of described factors is not necessarily all-inclusive, but is meant to provide a common sense guideline for fire departments and building owners to determine if a sprinkler system is probably required under the provisions of this particular law.

Figure J-01: [*From the Fire Safety Commission's Automatic Sprinkler Appeals Board Memorandum dated October 14, 2009, pages 5 and 6.*]

With regard to the possible nature of renovation work undertaken to accommodate the on-going use of Westport Middle School, it must be determined whether or not the proposed work would make the effort to install sprinklers substantially less than if the building was left intact. Of the examples of "major" alterations cited in the Board's memo, it is perhaps likely that a renovation for the on-going use of the building would include the demolition and reconstruction of existing ceilings and the installation of new suspended ceilings, and any project to replace the building's original HVAC, plumbing, and/or electrical systems might likewise be considered "major". However, flooring replacement work at Westport Middle School would not generally involve removal of subflooring, and this Study does not suggest a need to reposition walls, stairways, or doorways.

Renovation work for the on-going use of Westport Middle School might be considered to affect 33% or more of the building, and might very likely cost more than 33% of the assessed value of the building. Though neither MGL C. 148 S. 26G nor the October 14, 2009 advisory memo directly states so, the Automatic Sprinkler Appeals Board has recently indicated that certain scopes of renovation work that do not affect the ease of installation of a sprinkler system could be excluded from the total cost of the work in determining the 33% threshold. Examples include window and door replacement, roof replacement, and painting.

One important exception included in MGL C. 148 S. 26G involves the availability of water for a sprinkler system. The statute states that "no such sprinkler system shall be required unless sufficient water and water pressure exists." The Massachusetts Appellate Court has concluded that:

"The term "sufficient water and water pressure exists" means that the owner of a building or addition to which the statute applies must have access to a source of water sufficient to operate an adequate system of sprinklers, or the exemption applies. The source may be either on the

> land on which the new building or addition is constructed or off the land, provided that it is legally available to the owner of the building or addition."

Figure J-02: [*From the Fire Safety Commission's Automatic Sprinkler Appeals Board Memorandum dated October 14, 2009, page 7.*]

Until an actual project to renovate the building for on-going use as Westport Middle School is established, it is not possible to determine whether or not MGL C. 148 S. 26G would require the installation of an automatic sprinkler system. Planning for such a possible project should include the participation of and input from the Local Fire Official.

Installation of an automatic sprinkler system at Westport Middle School would cost in the range of $6 per gross square foot of building area. This price does not include any interior finish work to accommodate such a system, and does not include any work required to bring sufficient water to the building. A new automatic sprinkler system at Westport Middle School could therefore be expected to cost around $700,000 to $1,000,000.

[Page left intentionally blank.]

K. ESTIMATE OF PROBABLE COSTS

The intention of this Feasibility Study is to identify a range of actions that can be undertaken to allow for the on-going use of Westport Middle School as a middle school facility. It starts with known issues requiring mandatory action, and proceeds to unconfirmed problems and elective actions. The Cost Estimate Options Matrix is organized in similar fashion, providing an estimate of probable construction costs for scopes of work defined in Sections G through J.

Care has been taken to try to quantify estimated scopes of work. However, accurate cost estimates can only be determined during the course of an actual design project, with estimates achieving greater potential accuracy as the design progresses and more facts are known.

CGKV's third-party cost estimator, A.M. Fogarty & Associates (AMF), with assistance from EnviroScience, determined unit prices and calculated probable costs. AMF's raw data is included in Appendix A to this Study. CGKV re-organized the raw cost data into a Cost Estimate Options Matrix in order to categorize the work as follows: Mandatory PCB Bulk Product Removal; Mandatory Identified PCB Remediation Waste, with options for removal or encapsulation; Unconfirmed PCB Remediation Waste, with options for removal or encapsulation; Recommended Elective Improvements; and Possible Mandated Improvements. Costs were rounded to the nearest ten dollars. The Cost Estimate Options Matrix is located at the end of this Section K.

The following Table K-01 summarizes the detailed Cost Estimate Options Matrix. It includes three columns with running totals for the estimated expenses associated with the scope of work recommended by this Feasibility Study, for the highest priced overall scope of work envisioned by this Study, and least expensive scope of work to remove remaining PCB Bulk Products and encapsulate remaining PCB Remediation Wastes.

Table K-01: Summary of Cost Estimate Options

	Recommended Expense	Highest Expense	Lowest Expense
Mandatory Work to Remove Remaining PCB Bulk Products (i.e. – PCB Source Materials)	1,570,420	1,570,420	1,570,420
Running Total:	**1,570,420**	**1,570,420**	**1,570,420**
Work to Address Identified PCB Remediation Waste (i.e. – PCB Contaminated Materials):			
Recommended Work to Remove Some but Encapsulate Most PCB Remediation Waste	4,414,840		

Maximum Removal of PCB Remediation Waste		18,726,130	
Maximum Encapsulation of PCB Remediation Waste			3,132,610
Running Total:	**5,985,260**	**20,296,550**	**4,703,030**
Work to Address Unconfirmed PCB Remediation Waste (i.e. – PCB Contaminated Materials):			
Recommended Maximum Removal of PCB Remediation Waste	2,128,510	2,128,510	
Maximum Encapsulation of PCB Remediation Waste			1,751,010
Running Total:	**8,113,770**	**22,425,060**	**6,454,040**
Elective Facility Improvements:			
Roof Replacement	2,040,000	2,040,000	
Exterior Envelope (Brick) Repairs		206,500	
Acoustical Ceiling Treatments at Exposed Concrete	626,550	626,550	
Replace Auditorium Seating and Carpet		202,450	
Re-Build Exterior Site Brick Walls		267,110	
Replace Unit Vents and Air Handlers	2,033,200		
Replace HVAC System in its Entirety		6,256,000	
Replace Electrical, Data, and Communications System in its Entirety		2,346,000	
Running Total:	**12,813,520**	**34,369,670**	**6,454,040**
Possible (Likely) Mandated Improvements:			
Accessibility Improvements	2,500,000	2,500,000	1,000,000[1]
Structural / Seismic Upgrades	Unknown[2]	Unknown[2]	0[3]
Automatic Sprinkler System	1,000,000	1,000,000	0[3]
Running Total:	**16,313,520**	**37,869,670**	**7,454,040**

Note[1]: As discussed in Section J, a project costing greater than 30% of the assessed building value triggers the requirement for full compliance with 521 CMR. It is likely that variances will be requested from AAB in order to avoid full compliance and minimize the added cost of accessibility improvements. It is not possible to predict the outcome of a variance request and the resulting cost of necessary improvements. $1,000,000 used here is a very rough estimate.

Note[2]: Original Construction Documents do not indicate design loads, and possible structural and/or seismic improvements cannot be readily determined at this time without identification of the scope for an actual construction project and detailed engineering.

Note[3]: Lowest expense is $0 if these improvements are not mandated.

It is critical to note that the costs listed in these charts and tables are estimates of probable construction costs only. They do not include additional project costs, such as designer fees, permits, and project management costs, that would be part of any renovation project. Project costs can add around 15% to the construction costs.

The estimates of probable construction cost are based on 2013 costs. An escalation factor should be applied for a project undertaken further into the future to account for inflation and other potential cost increases.

Only the highest priced option would remove all PCB Remediation Waste and eliminate the current building use restrictions. All other options would require on-going monitoring and adherence to an operations and maintenance program to ensure the health and safety of building occupants, with an estimated yearly cost of around $75,000. This cost, too, might escalate over time.

[Page left intentionally blank.]

Westport Middle School Cost Estimate Options Matrix

Indicates recommended option.

	Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
		Removal	Encapsulation	Removal	Encapsulation		
G. REMOVAL OF REMAINING PCB BULK PRODUCTS							
1. Exterior Doors - Exterior and Interior Caulk:							
a. Two-story height exterior door assemblies							
i. Quantity: Remove, and subsequently replace, caulk at 5 exterior door assemblies x (28.5 LF exterior caulk + 28.5 LF interior caulk each) = approximately 285 LF total.	12,790						
b. One-story exterior door assemblies							
i. Quantity: Remove, and subsequently replace, caulk at 2 exterior door assemblies x (14.5 LF exterior caulk + 14.5 LF interior caulk each) = approximately 58 LF total.	2,600						
c. Aluminum-framed glazed storefront assembly							
i. Quantity: Remove, and subsequently replace, caulk at 1 storefront assembly x (76 LF exterior caulk + 76 LF interior caulk) = approximately 152 LF total.	6,820						
2. Exterior Windows - Interior Glazing Compound:							
a. Type 'A/A1' windows							
i. Quantity: Remove, and subsequently replace, 144 Type 'A/A1' windows x 18 SF each = approximately 2,592 SF total.	345,460						
b. Type 'B' windows							
i. Quantity: Remove, and subsequently replace, 95 Type 'B' windows x 34 SF each = approximately 3,230 SF total.	430,490						
c. Interior wood and Corian trim							
i. Quantity: Remove, and subsequently replace, interior wood trim and blocking at 144 Type 'A/A1' windows x 15 LF each = approximately 2,160 LF total.	70,500						
ii. Quantity: Remove, and subsequently replace, interior Corian stools at 144 Type 'A/A1' windows x 3 LF each = approximately 432 LF total.	28,200						
3. Mastic Above Tectum Form Plank:							
a. Main Stairways							
i. Quantity: Remove, and subsequently encapsulate, Tectum ceilings at 5 stairways x 300 SF of ceiling area each = approximately 1,500 SF of form plank and mastic removal total.	49,980						

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
ii.	Quantity: Remove, and subsequently replace, brick veneer at 5 stairways x 3 courses x 33 LF (average) of veneer brick side wall x 2 walls each = approximately 330 LF total.	76,300						
b.	Custodial and Receiving Area							
i.	Quantity: Remove Tectum form plank and subsequently encapsulate exposed concrete ceiling = approximately 1,600 SF total.	53,310						
ii.	Quantity: Remove, and subsequently replace, suspended ceiling system = approximately 230 SF total.	5,630						
c.	Kitchen Area							
i.	Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at serving area = approximately 300 SF total.	14,080						
ii.	Quantity: Remove Tectum form plank above plaster soffit, and subsequently encapsulate concrete, at Teacher Dining = approximately 100 SF total.	4,690						
iii.	Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at ancillary areas = approximately 500 SF total.	23,460						
iv.	Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above refrigerators and freezers = approximately 100 SF total.	3,330						
d.	Storage Room 153							
i.	Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, at Storage Room 153 = approximately 450 SF total.	14,990						
e.	Tops of Partitions							
i.	Quantity: Remove Tectum form plank, and subsequently provide new wood blocking and trim, above existing partitions = approximately 2,425 linear feet total.	98,940						
f.	Above Mechanical Equipment							
i.	Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at 24 classroom unit vents x 22 SF (average) each = approximately 528 SF total.	81,600						
ii.	Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at mechanical equipment and ductwork at 6 other miscellaneous interior locations = approximately 600 SF total.	44,880						
g.	Above Ceiling Mounted Soffits							
i.	Quantity: Remove 5 movable partition assemblies = approximately 1,500 SF total.	10,200						
ii.	Quantity: Remove soffit assemblies and Tectum form plank, and subsequently encapsulate concrete, at 8 soffit assemblies = approximately 1,100 SF total.	44,130						

	Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
		Removal	Encapsulation	Removal	Encapsulation		
iii. Quantity: Provide 137 LF new partitions (double-sided) x 11'-0" height = approximately 1,500 SF total.	51,000						
h. Above Teacher Closets							
i. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above 8 closets x 5 SF each = approximately 40 SF total.	1,880						
i. Concealed Above Suspended Ceilings							
i. Quantity: Remove Tectum form plank above suspended ceilings (including removal and reinstallation of suspended ceiling systems), and subsequently encapsulate concrete = approximately 1,475 SF x 1.20 (contingency) = approximately 1,770 SF total.	58,980						
j. Residue From 2011 Project							
i. Quantity: Allowance for removal of Tectum form plank and associated mastic residue remaining from 2011 project = approximately 200 LF total.	6,800						
4. Interior Caulk:							
a. Concealed interior caulk							
i. Quantity: Allowance for removal, and subsequent replacement, of concealed interior caulk = approximately 200 LF total.	8,980						
5. Foam Filler Between Interior Concrete Columns / Beams and Interior Plaster Walls:							
a. Concealed foam filler							
i. Quantity: Allowance for removal of concealed foam filler = approximately 500 LF total.	20,400						
H. REMOVAL OR ENCAPSULATION OF PCB REMEDIATION WASTES							
1. Exterior Window Openings:							
a. *Removal:* Existing window systems							
b. *Removal:* Brick at jambs and sill							
i. Quantity: Remove one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.		111,020					
ii. Quantity: Remove one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.		5,630					
iii. Quantity: Remove 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.		42,900					
iv. Quantity: Remove one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.		18,800					
v. Quantity: Remove one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.		18,630					
c. *Removal:* Concrete at beams							

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
i.	Quantity: Remove 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.		23,500					
ii.	Quantity: Remove 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.		23,280					
d.	*Removal:* Restoration of brick and masonry							
i.	Quantity: Rebuild one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.		234,370					
ii.	Quantity: Rebuild one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.		11,890					
iii.	Quantity: Rebuild 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.		203,590					
iv.	Quantity: Rebuild one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.		20,560					
v.	Quantity: Rebuild one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.		20,370					
vi.	Quantity: Pin and patch 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.		18,800					
vii.	Quantity: Pin and patch 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.		18,630					
e.	*Removal:* (Alternative for curtain wall at Type 'B') [Not priced]							
f.	*Encapsulation:* Encapsulation with epoxy coating [Not recommended]							
g.	*Encapsulation:* Encapsulation with metal composite cladding							
i.	Quantity: Clad the perimeter of all window openings with metal composite material system = approximately 6,700 SF total.			200,460				
2.	**Exterior Door Openings:**							
a.	*Removal:* Existing door systems							
i.	Quantity: Remove 5 two-story exterior door assemblies x 150 SF each = approximately 750 SF total.		5,100					
ii.	Quantity: Remove 2 one-story exterior door assemblies x 98 SF each = approximately 196 SF total.		1,360					
iii.	Quantity: Remove 1 storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total.		6,790					
b.	*Removal:* Brick and concrete							
i.	Quantity: Remove one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total.		11,380					
ii.	Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total.		2,570					

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
iii.	Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total.		1,900					
iv.	Quantity: Remove 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total.		1,030					
c.	*Removal:* Restoration of brick and concrete							
i.	Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total.		24,030					
ii.	Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total.		5,430					
iii.	Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total.		4,010					
iv.	Quantity: Pin and patch 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total.		1,160					
d.	*Removal:* Replacement of exterior door assemblies							
i.	Quantity: Provide 5 new two-story exterior door assemblies x 150 SF each = approximately 750 SF total.		51,000					
ii.	Quantity: Provide 2 new one-story exterior door assemblies x 98 SF each = approximately 196 SF total.		13,600					
iii.	Quantity: Provide 1 new storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total.		42,430					
e.	*Removal:* Remove and reinstall heating equipment							
i.	Quantity: Remove and reinstall cabinet unit heaters and plywood enclosures at 5 exterior door assemblies.		5,100					
ii.	Quantity: Remove and reinstall approximately 20 LF finned tube radiation and plywood enclosure at receiving area storefront.		3,400					
f.	*Encapsulation:* Encapsulation with metal composite cladding							
i.	Quantity: Clad all exterior door assembly openings with metal composite material system = approximately 560 SF total.			16,760				
3.	**Exterior Concrete Walkways:**							
a.	*Removal:* Remove and replace exterior concrete walkways							
i.	Quantity: Remove and replace reinforced concrete slab-on-grade walkways at seven building entrances = approximately 1,430 SF total.		68,070					
b.	*Encapsulation:* [Not applicable]			68,070				
4.	**Exterior Soils:**							
a.	*Removal:* Remove, replace, and re-seed soils at building perimeter							

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
i.	Quantity: Remove PCB-contaminated soil at the building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.		50,320					
ii.	Quantity: Provide new soil at building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.		8,860					
iii.	Quantity: Re-seed at building perimeter = approximately 8,000 SF total.		1,310					
b.	*Encapsulation:* [Not recommended]			60,490				
5.	**Brick and Concrete at Interior Caulk and Joint Fillers:**							
a.	*Removal:* Joint at brick to concrete at stairways							
i.	Quantity: Remove, and subsequently replace, backer rod and caulk between brick veneer and concrete columns, 11 LF x 2 joints per stairway x 5 stairways x 2 floors = approximately 220 LF total.		8,980					
ii.	Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 8" width x 11 LF per side x 2 sides x 5 stairways x 2 floors = approximately 220 LF total.		47,870					
iii.	Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 11 LF per side x 2 sides x 5 stairways x 2 floors = approximately 220 LF total.		40,390					
iv.	Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.		14,690					
v.	Quantity: Remove, and subsequently reinstall, 3 steel-framed door, fixed lite, and fascia assemblies (including backer rod and caulk) x 100 SF each = approximately 300 SF total.		11,220					
b.	*Encapsulation:* Joint at brick to concrete at stairways							
i.	Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 2 columns per stairway x 5 stairways x 2 floors = approximately 340 SF total.			2,080				
ii.	Quantity: Encapsulate exposed edge of brick with epoxy paint x 4 SF x 2 walls x 3 landings = approximately 24 SF total.			150				
iii.	Quantity: Encapsulate exposed contiguous brick wall with epoxy paint x 55 SF x 2 walls x 7 landings = approximately 770 SF total.			4,710				
iv.	Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.			14,690				
c.	*Removal:* Joint at brick to concrete at window piers							
i.	Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 2 edges per column x 21 columns = approximately 420 LF total.		41,130					
ii.	Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 1 edge per column x 5 columns = approximately 50 LF total.		4,900					
d.	*Encapsulation:* Joint at brick to concrete at window piers							

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
	i. Quantity: Encapsulate concrete columns with epoxy paint x 33 SF per column (average) x 21 columns = approximately 693 SF total.			4,240				
	ii. Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 5 columns = approximately 85 SF total.			520				
e.	*Removal:* Joint at steel frames to brick veneer							
	i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 15 large openings x 100 SF per opening (average) = approximately 1,500 SF total.		56,100					
	ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 4 small openings x 25 SF per opening (average) = approximately 100 SF total.		8,430					
	iii. Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 12" width x 11 LF height per jamb (average) x 42 jambs = approximately 462 LF total.		100,530					
f.	*Encapsulation:* Joint at steel frames to brick veneer							
	i. Quantity: Encapsulate exposed brick wall jamb with epoxy paint "accent band", 12" wide x 11 LF per jamb x 38 jambs x 2 sides each = approximately 836 SF total.			5,120				
g.	*Removal:* Joint at steel frames to reinforced brick masonry walls							
	i. Quantity: Remove, and subsequently reinstall, steel-framed door and fixed-lite assemblies (including backer rod and caulk) at 15 openings x 50 SF per opening (average) = approximately 750 SF total.		45,900					
	ii. Quantity: Remove, and subsequently parge, 1/2" depth brick x 12" total width x 23 LF (jambs + head, average) x 15 openings = approximately 345 LF total.		32,840					
h.	*Encapsulation:* Joint at steel frames to reinforced brick masonry walls							
	i. Quantity: Encapsulate exposed brick jambs and heads with epoxy paint "accent band", 12" wide x 23 LF per opening (average) x 15 openings x 2 sides each = approximately 690 SF total.			4,690				
i.	*Removal:* Joint at steel frames to concrete columns							
	i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 52 large openings x 110 SF per opening (average) = approximately 5,720 SF total.		194,480					
	ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 38 small openings x 25 SF per opening (average) = approximately 950 SF total.		80,100					
	iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 10" width x 11 LF per jamb x 130 jambs = approximately 1,430 LF total.		136,140					
j.	*Encapsulation:* Joint at steel frames to concrete columns							
	i. Quantity: Encapsulate concrete columns with epoxy paint x 30 SF per column (average) x 130 columns = approximately 3,900 SF total.			26,520				

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
k.	*Removal:* Expansion / control joints in reinforced brick masonry walls							
i.	Quantity: Remove, and subsequently replace, backer rod and caulk at expansion / control joints x 11 LF height x 20 joints = approximately 220 LF total.		13,460					
ii.	Quantity: Remove, and subsequently parge, 1/2" depth brick x 8” total width (4” either side of joint) x 11 LF height x 20 joints = approximately 220 LF total.		20,940					
l.	*Encapsulation:* Expansion / control joints in reinforced brick masonry walls							
i.	Quantity: Encapsulate brick with epoxy paint x 12” wide 11 LF tall x 20 joints = approximately 220 SF total.			1,350				
m.	*Removal:* Joint at concrete columns and beams to plaster							
i.	Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4” width x approximately 12,000 LF = approximately 12,000 LF total.		1,175,040					
ii.	Quantity: Remove, and subsequently re-build, steel framing and plaster walls immediately adjacent to concrete columns and beams = approximately 12,000 LF.		816,000					
n.	*Encapsulation:* Joint at concrete columns and beams to plaster							
i.	Quantity: Encapsulate 136 concrete columns with epoxy paint x 24” wide (average) 11 LF tall = approximately 2,992 SF total.			18,310				
ii.	Quantity: Encapsulate 127 concrete columns with epoxy paint x 48” wide (average) 11 LF tall = approximately 5,588 SF total.			34,200				
iii.	Quantity: Encapsulate concrete beams with epoxy paint x 30” wide (average) 2,520 LF long = approximately 6,300 SF total.			38,560				
iv.	Quantity: Encapsulate concrete beams with epoxy paint x 52” wide (average) 1,325 LF long = approximately 5,742 SF total.			35,140				
6.	**Concrete Columns, Beams, and Slabs:**							
a.	*Removal:* Remove and parge concrete columns, beams, and slabs							
i.	Quantity: Remove, and subsequently parge, 1/2" depth concrete at 136 columns x 24” width (average) x 11 tall LF each = approximately 2,992 SF total.		203,460					
ii.	Quantity: Remove, and subsequently parge, 1/2" depth concrete at 258 columns x 48” width (average) x 11 tall LF each = approximately 11,355 SF total.		772,140					
iii.	Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 30” width (average) x 3,120 LF = approximately 7,800 SF total.		530,400					
iv.	Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 52” width (average) x 8,560 LF = approximately 37,093 SF total.		2,522,320					
v.	Quantity: Remove, and subsequently parge, 1/2" depth concrete at ceilings = approximately 85,175 SF total.		5,791,900					
b.	*Encapsulation:* Encapsulate concrete with epoxy coating							

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
i.	Quantity: Encapsulate concrete columns with epoxy paint at 394 columns = approximately 14,347 SF total.			87,800				
ii.	Quantity: Encapsulate concrete beams with epoxy paint = approximately 44,893 SF total.			274,750				
iii.	Quantity: Encapsulate concrete ceilings with epoxy paint = approximately 85,175 SF total.			521,270				
7.	**Interior Brick Walls:**							
a.	*Removal:* Remove and re-build brick walls at Type 'B' windows							
i.	Quantity: Remove, and subsequently reinstall, 531 LF of finned tube radiation with plywood enclosure = approximately 531 LF total.		18,050					
ii.	Quantity: Remove, and subsequently rebuild, one interior wythe of brick veneer x 1'-4" high x 531 LF = approximately 708 SF total.		101,100					
b.	*Removal:* Remove and re-build brick walls at stairways							
i.	Quantity: Remove, and subsequently reinstall, 22 LF wall-mounted handrail x 5 stairways = approximately 110 LF total.		20,940					
ii.	Quantity: Remove, and subsequently rebuild, 550 SF brick veneer x 2 walls x 5 stairways = approximately 5,500 SF total.		411,400					
c.	*Removal:* Remove and parge reinforced brick masonry walls							
i.	Quantity: Remove, and subsequently reinstall, 260 LF of existing lockers = approximately 260 LF total.		3,540					
ii.	Quantity: Remove, and subsequently reinstall, 100 LF of existing shelving = approximately 100 LF total.		680					
iii.	Quantity: Remove, and subsequently parge, 1/2" depth of existing brick walls = approximately 11,100 SF total.		679,320					
d.	*Encapsulation:* Encapsulate interior brick walls with epoxy coating							
i.	Quantity: Encapsulate brick walls below Type 'B' window sills with epoxy paint = approximately 708 SF total.			4,330				
ii.	Quantity: Encapsulate brick walls at stairways with epoxy paint = approximately 5,500 SF total.			33,660				
iii.	Quantity: Encapsulate brick walls at Lower and Upper Level main corridors with epoxy paint = approximately 11,100 SF total.			67,930				
8.	**Painted Plaster Walls:**							
a.	*Removal:* Remove and replace plaster and rock lath							
i.	Quantity: Remove, and subsequently reinstall, wall mounted items such as chalkboards, white boards, and tack boards, 133 boards x 42.5 SF (average) = approximately 5,650 SF total.		22,610					
ii.	Quantity: Remove painted plaster and rock lath wall surfaces = approximately 110,000 SF total.		1,122,000					
iii.	Quantity: Provide new blue board with skimcoat plaster, painted = approximately 110,000 SF total.		1,196,800					

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
b.	*Encapsulation:* Encapsulate interior plaster walls with epoxy coating							
i.	Quantity: Encapsulate painted plaster walls with epoxy paint = approximately 110,000 SF total.			598,400				
9.	**Interior Steel-Framed Door and Fixed Lite Assemblies:**							
a.	*Removal:* Remove and replace glass and stops							
i.	Quantity: Remove, and subsequently replace, glass and stops at fixed lite assemblies = approximately 4,300 SF total.		216,380					
b.	*Removal:* Strip and re-paint steel frames and doors							
i.	Quantity: Strip, and subsequently re-paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.		53,450					
ii.	Quantity: Strip, and subsequently re-paint, steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.		277,440					
c.	*Removal:* [Remove and replace steel frame assemblies – not recommended]							
d.	*Encapsulation:* Encapsulate glazing compound with new sealant							
i.	Quantity: Provide new sealant at perimeter of all fixed lite panes = approximately 11,750 LF total.			71,910				
ii.	Quantity: Encapsulate with epoxy paint, 525 LF wood rails x 9" surface height (including depth) x 2 sides = approximately 788 SF total.			4,820				
e.	*Encapsulation:* Encapsulate steel frames and doors with epoxy coating							
i.	Quantity: Encapsulate with epoxy paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.			37,410				
ii.	Quantity: Encapsulate with epoxy paint steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.			173,400				
10.	**Acoustical Tile Ceilings and Plywood Fascias:**							
a.	*Removal:* Remove and replace suspended ceiling system							
i.	Quantity: Remove, and subsequently replace, complete suspended acoustical ceiling tile system = approximately 29,800 SF total.		425,540					
ii.	Quantity: Remove, and subsequently reinstall, ceiling-mounted fixtures and devices = [allowance].		162,110					
b.	*Removal:* Remove and reconstruct fascias							
i.	Quantity: Remove, and subsequently replace, plywood fascia assemblies, 145 LF x 1'-0" high (average) = approximately 145 SF total.		6,900					
ii.	Quantity: Remove, and subsequently replace, plywood fascia assemblies, 833 LF x 3'-0" high (average) = approximately 2,500 SF total.		119,000					
iii.	Quantity: Remove, and subsequently replace, plywood fascia and soffit assemblies at windows, 261 LF x 1'-0" high x 1'-0" deep (average) = approximately 522 SF total.		24,850					
c.	*Encapsulation:* [Suspended ceiling system - not applicable]				587,650			

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
d.	*Encapsulation:* Encapsulate fascias with epoxy coating							
i.	Quantity: Paint plywood fascias with epoxy coating = approximately 3,167 SF total.			19,380				
11.	**Interior Floors:**							
a.	*Removal:* Remove and replace VCT/VAT flooring							
i.	Quantity: Remove, and subsequently replace, existing VCT and VAT = approximately 89,500 SF total.				1,004,190			
b.	*Removal:* Remove wood floors and replace with VCT							
i.	Quantity: Remove existing wood flooring and subsequently replace with new plywood underlayment and VCT = approximately 5,500 SF total.				142,120			
c.	*Removal:* Remove and replace resilient base							
i.	Quantity: Remove, and subsequently replace, existing resilient base = approximately 12,000 LF total.		93,840					
d.	*Encapsulation:* [Resilient flooring and base - not applicable]			93,840		1,004,190		
e.	*Encapsulation:* [Wood flooring - not applicable]					142,120		
12.	**Miscellaneous Interior Items:**							
a.	*Removal:* [Miscellaneous interior caulk] [Allowance]		20,000					
b.	*Encapsulation:* [Miscellaneous interior caulk – not applicable]			20,000				
c.	*Removal:* [Interior folding partitions – included in G.3.g]							
d.	*Encapsulation:* [Interior folding partitions – not applicable]							
e.	*Removal:* Interior wood rails and trim							
i.	Quantity: Remove, and subsequently replace, wood panel guardrails / handrails at stairways = approximately 175 LF total.				57,120			
ii.	Quantity: Remove, and subsequently replace, wall-mounted wood handrails at stairways = approximately 200 LF total.				28,560			
iii.	Quantity: Remove existing 2x8 wood handrails and replace with guardrails / handrails at stairways = approximately 60 LF total.				8,570			
f.	*Encapsulation:* Interior wood rails and trim							
i.	Quantity: Encapsulate wood panel guardrails at stairways with epoxy paint, 175 LF x 2'-0" high (average) x 2 sides = approximately 750 SF total.					4,590		
ii.	Quantity: Encapsulate wood handrails at stairways with epoxy paint = approximately 260 LF total.					2,120		
g.	*Removal:* Remove and replace visual display boards							
i.	Quantity: Remove, and subsequently replace, 133 visual display boards x 42.5 SF each (average) = approximately 5,650 SF total.				169,050			
h.	*Encapsulation:* [Encapsulate visual display boards – not applicable]					169,050		
i.	*Removal:* Remove and replace interior casework							

	Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
		Removal	Encapsulation	Removal	Encapsulation		
i. Remove, and subsequently replace, base cabinets with countertop (average) = approximately 930 LF total.				379,440			
j. *Encapsulation:* [Encapsulate interior casework – not applicable]					379,440		
k. *Removal:* Remove and replace metal lockers							
i. Quantity: Remove, and subsequently replace, typical corridor lockers x 670 LF x 5'-0" height (average) = approximately 670 LF total.				218,690			
ii. Quantity: Remove, and subsequently replace, gymnasium (locker room) lockers x 370 LF x 5'-0" height (average) = approximately 370 LF total.				120,770			
l. *Encapsulation:* Encapsulate metal lockers with epoxy coating							
i. Quantity: Encapsulate existing metal lockers, outside and inside, with epoxy paint x 1,040 LF x 5'-0" height (average) = approximately 1,040 LF total.					49,500		
I. RECOMMENDED FACILITY IMPROVEMENTS							
1. Building Envelope:							
a. Remove existing and provide complete new roof system							
i. Quantity: Remove existing ballasted EPDM roof system and provide complete new single-ply membrane system = approximately 60,000 SF total.						2,040,000	
b. Repair exterior brick veneer walls							
i. Quantity: Repoint existing brick at cracked mortar joints = approximately 1,500 SF total.						46,920	
ii. Quantity: Replace existing cracked, damaged, or displaced bricks = approximately 500 SF total.						78,200	
iii. Quantity: Cut brick and install new control joints at outside corners at 32 locations x 22 LF each = approximately 704 LF total.						81,380	
2. Interior Finishes:							
a. Adhered acoustical ceiling panels							
i. Quantity: Adhere acoustical tile panels to existing exposed concrete ceilings = approximately 54,200 SF total.						626,550	
b. Suspended acoustical ceiling tile system [Alternate to adhered]							
i. Quantity: Install suspended acoustical tile ceiling system below existing exposed concrete ceilings = approximately 54,200 SF total.						[479,130]	
3. Fixtures, Furnishings, and Equipment: [See Sections G and H]							
4. Auditorium:							
a. Replace seating and carpeting							
i. Quantity: Replace auditorium seating = approximately 402 seats total.						166,750	
ii. Quantity: Replace auditorium carpeting = approximately 5,000 SF (including risers) total.						35,700	
5. Accessibility: [See Section J]							

		Mandatory PCB Bulk Product Removal	Mandatory Identified PCB Remediation Waste		Unconfirmed PCB Remediation Waste		Recommended Improvements	Possible Mandated Improvements
			Removal	Encapsulation	Removal	Encapsulation		
6.	**Site:**							
a.	Remove and reconstruct exterior brick walls							
i.	Quantity: Remove and reconstruct exterior solid brick walls x 12" thick = approximately 3,100 SF total.						236,100	
ii.	Quantity: Remove and replace exterior steel handrails (upper and lower) at exterior ramps = approximately 120 LF total.						31,010	
7.	**Mechanical Systems:**							
a.	Replace unit vents and air handlers							
i.	Quantity: Replace all unit ventilators and air handlers x 115,000 gross SF						2,033,200	
b.	Replace hot water piping and finned tube radiators							
i.	Quantity: Replace and insulate all hot water piping x 115,000 gross SF						938,400	
c.	Provide direct digital control building automation system							
i.	Quantity: Replace existing controls with new DDC system x 115,000 gross SF						625,600	
d.	Replace roof fans and repair associated ductwork							
i.	Quantity: Replace roof fans and repair ductwork x 115,000 gross SF						391,000	
e.	Replace hot water circulation pumps							
i.	Quantity: Replace hot water pumps						35,020	
f.	Replace HVAC system in its entirety with new high efficiency system [Alternate to selective replacements]							
i.	Quantity: Replace HVAC system in its entirety x 115,000 gross SF						[6,256,000]	
8.	**Electrical Systems:**							
a.	Replace electrical, data, and communications system in its entirety							
i.	Quantity: Replace electrical, data, and communications system in its entirety x 115,000 gross SF						2,346,000	
J.	**POSSIBLE MANDATED FACILITY IMPROVEMENTS**							
1.	**Accessibility Improvements**							2,500,000
2.	**Structural / Seismic Upgrades**							[Unknown]
3.	**Automatic Sprinkler System**							1,000,000
Totals:		**1,570,420**	**18,726,130**	**3,132,610**	**2,128,510**	**1,751,010**	**11,944,610**	**3,500,000**
Recommended Totals:		**1,570,420**	**4,414,840**		**2,128,510**		**4,699,750**	**3,500,000**

[Page left intentionally blank.]

L. RENOVATING WESTPORT MIDDLE SCHOOL VS. BUILDING NEW

It can be a helpful exercise to consider the pros and cons of renovating the existing Westport Middle School building compared to constructing a completely new building on the same or a different site. [CGKV understands that Westport Community Schools is also considering possible options to construct additions at the existing elementary school(s) and high school to accommodate the middle school population. Evaluation of these options is beyond the scope of this current Study.]

The existing Westport Middle School is approximately 116,000 gross square feet in area. The net area (i.e. – usable program spaces) is approximately 81,039 square feet. If the Town of Westport elected to construct an entirely new middle school, it would likely do so with an eye toward receiving some reimbursement of project costs through the Massachusetts School Building Authority. The MSBA has educational program and space standard guidelines that must be followed by school districts seeking reimbursement. [School districts may exceed the standards, but will not receive reimbursement on those excesses.] For an enrollment of 544 (the school's 2012/2013 enrollment), MSBA standards would allow a 96,645 gross square foot building, including 64,062 net square feet of program space. The resulting new facility would be over 19,000 gross square feet and almost 17,000 net square feet smaller than the current building.

Figure L-01 illustrates the relative sizes of different types of program space at the current Westport Middle School compared with a new middle school conforming to MSBA space standards.

The net area of Core Academic Spaces plus Special Education Spaces (i.e. – general classroom type spaces) is very similar at the existing Westport Middle School and a typical new middle school, at 33,533 SF (WMS) to 31,940 SF (new). Typical classrooms at the existing Westport Middle School are around 800-850 SF, whereas MSBA allows typical classrooms to be 850-950 SF.

The existing Westport Middle School includes a generous 6,899 SF devoted to Art and Music. MSBA standards call for less than half that area – 3,050 SF. Health and Physical Education spaces at the existing building are around 60% larger than the typical new school, at 13,442 SF (WMS) to 8,400 SF (new). The existing Media Center and related spaces is 5,768 SF compared to 3,508 SF for a new school, a 64% difference. Dining and Food Service and Medical, Administrative, and Guidance spaces at the existing Westport Middle School are also larger than would be allowed at a typical new school.

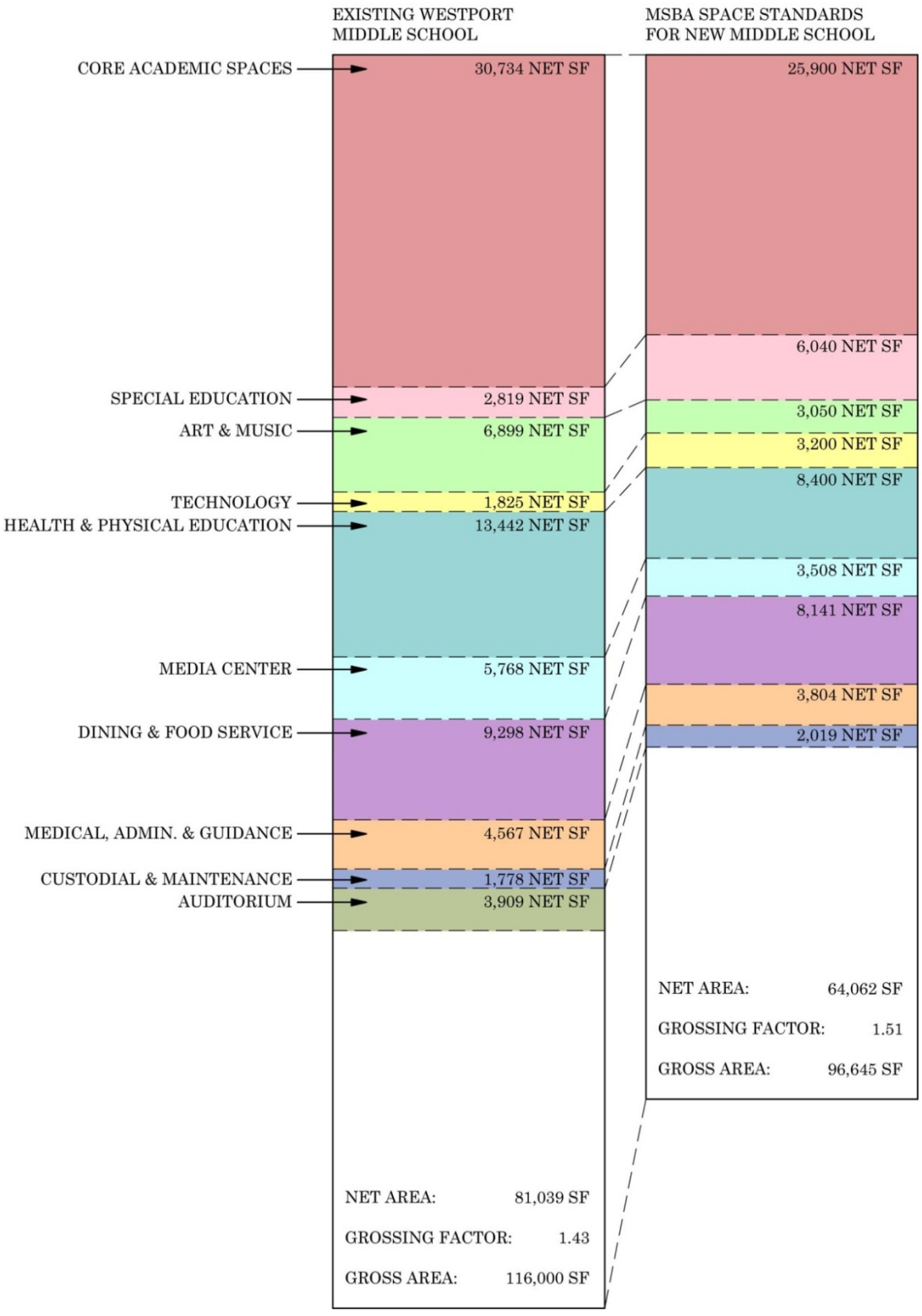


Figure L-01: Existing program areas versus typical MSBA standard program areas.

Westport Middle School is fortunate to have a fairly sophisticated Auditorium, with fixed seating for 400. MSBA standards for a new middle school do not allow for construction of a dedicated Auditorium space.

Westport Community Schools should evaluate whether the sizes, quantities, configurations, characteristics, and usability of program spaces currently available at the middle school are deficient, sufficient, or excessive. This sort of programming exercise can help to identify the limits and/or advantages of constructing a new middle school facility.

Project costs associated with renovating the existing Westport Middle School or building a new facility are also a critical consideration.

Estimates of probable construction costs associated with a variety of options for continuing the on-going use of Westport Middle School are discussed in detail in Section K. The specific approach to renovating Westport Middle School recommended in Section K would cost in the neighborhood of $16,300,000. The full range of options could cost anywhere from $7,500,000 to $37,900,000. Only the highest priced option would remove all PCB Remediation Wastes and eliminate the current building use restrictions. All other options would require on-going monitoring and adherence to an operations and maintenance program to ensure the health and safety of building occupants, with an estimated yearly cost of around $75,000.

It is not feasible to abate and renovate Westport Middle School as an occupied phased project. A renovation project will need to include the additional costs of providing a temporary home to accommodate the school and transporting books, computers, and furnishings.

The construction cost for building a new middle school facility in Massachusetts typically runs from $300 to $350 per gross square foot, excluding land acquisition. A 96,645 SF building would be expected to cost between $29,000,000 and $34,000,000. To build a new school the same size as the current middle school would be expected to cost between $33,000,000 and $38,500,000.

If the Town decides to abandon the existing Westport Middle School building, the cost of remaining abatement and demolition of the structure is estimated to cost around $5,000,000 to $5,500,000.

[Page left intentionally blank.]

M. DISCUSSION

Westport Community Schools acted with urgency upon the discovery of PCBs at Westport Middle School. The 2011 PCB Source Removal Project was a complex and costly undertaking that removed the majority of PCB Bulk Product Materials, reduced concentrations of PCBs in the air, and allowed for re-occupation of the school in September 2011. Remaining PCB Bulk Product Materials and PCB Remediation Waste, however, must still be addressed in order to satisfy the United States Environmental Protection Agency [USEPA].

If Westport Community Schools decides to continue to use Westport Middle School as a middle school facility, remaining PCB Bulk Product Materials must be fully removed from the building in accordance with USEPA requirements. Materials include exterior and interior caulk at exterior doors; glazing compound at exterior windows; mastic above Tectum form plank ceilings; interior caulk; and foam joint fillers between concrete and plaster assemblies. Many of these materials are concealed and require alterations to existing building components in order to remove them.

PCB Remediation Waste, those materials that absorbed PCBs through direct contact with source materials or exposure to contaminated indoor air and/or dust, must also be addressed to allow on-going occupancy of the building by middle-schoolers. A number of PCB Remediation Waste materials have been tested and confirmed, including: brick at window and door jambs and sills; exterior concrete at window and door heads; exterior concrete walkways; exterior soils; brick at interior jambs and sills adjacent to window systems; concrete at interior columns and beams adjacent to window systems; brick at interior expansion and control joints; interior glazing compound; painted surfaces; concrete columns, beams, and ceilings; acoustical ceiling panels; miscellaneous interior caulk; and resilient base mastic. [Resilient base mastic might be classified as a PCB Bulk Product given its high concentration of PCBs.]

Research by USEPA and others has confirmed that many common building materials can act as PCB "sinks" and absorb PCBs. Though further sampling and testing has not yet been performed, many other interior materials present in the school might be contaminated with PCBs at a level requiring action: cast-in-place concrete ceilings at removed Tectum form plank; interior brick walls; plywood fascias and soffits; folding partitions; wood rails and trim; wood floors; resilient floors and base; visual display boards; built-in cabinets; painted lockers; and plaster walls.

This Feasibility Study takes a "worst case" approach to the possible extent of PCB contamination – anything that could be contaminated is contaminated. The first step in proceeding with a potential remediation and renovation project at Westport Middle School

should be to conduct significantly more sampling and testing in order to much more accurately confirm the types, concentrations, and quantities of actual PCB Remediation Waste present in and around the building.

Whereas remaining PCB Bulk Product Materials must be fully removed, PCB Remediation Waste may be removed or encapsulated. It is CGKV's understanding that anything short of full removal of PCB Remediation Waste would leave USEPA building use restrictions in place, and would require on-going monitoring and adherence to an operations and maintenance program.

CGKV considers a project to fully remove all potential PCB Remediation Waste to be infeasible. The estimate of probable construction cost for this scope of work is around $37,900,000. This cost is at the high end for construction of a new middle school of similar size. The practicability of the work is also in question, and can only be confirmed through more detailed investigation and design.

CGKV instead recommends a combination of removal and encapsulation of PCB-contaminated building materials. [See Section K for a summary of these recommendations and their associated costs.]

We do not recommend encapsulation, either with painted epoxy or metal composite material cladding, of any contaminated exterior brick or concrete surfaces surrounding windows and doors. Painted coatings exposed to weather will be a continual maintenance issue, and cladding brings concerns about affecting the building envelope performance. Exterior encapsulation will also have a significant impact on the appearance of the building. Instead, we recommend removal of contaminated brick and concrete and restoration with similar materials that maintain the integrity of the exterior envelope.

There is a large quantity of brick and concrete surfaces in the building interior that are known, or are suspected, to have absorbed PCBs. The effort required to physically remove PCBs that have been absorbed into interior brick or concrete would be Herculean. CGKV recommends encapsulation, with an epoxy coating, of the vast majority of interior brick and concrete surfaces. Encapsulation would come at the expense of the look and feel of natural red brick walls around the building core and at stair halls. Thoughtfully done, however, painted surfaces can provide a comfortable interior environment and contribute to a better sense of space and way-finding in the building. [Alternative encapsulation methods, such as cladding, can be explored (though at greater expense than painting).] One exception to this general approach is our recommendation to remove and re-build exposed brick veneer walls at the building perimeter in order to maintain the current appearance around Type 'B' windows.

It is also not feasible to remove and replace contaminated painted plaster walls throughout the building. Absent a need or desire to gut the building and completely reconfigure all interior spaces – a prospect not proposed by this Study – painting all interior plaster walls with an epoxy coating is the recommended course of action.

Painted steel-framed door and fixed lite assemblies should also generally be retained. Because these assemblies come into continual contact with building users, steel frames and doors should be stripped of PCB-contaminated paint down to bare metal and subsequently repainted. It may also be worthwhile to remove PCB-contaminated glazing compound at fixed lites, thereby requiring removal and replacement of the glass panes themselves.

It is not feasible to encapsulate contaminated suspended acoustical tile ceilings, given their uneven and porous surface textures. Instead, we recommend that all suspended ceilings, and the plywood fascias that facilitate changes in ceiling height, be replaced in their entirety.

If interior resilient flooring is found to be contaminated, there is no practical means to encapsulate it; contaminated flooring should be removed and replaced. Original vinyl asbestos tile flooring shows signs of wear, and its replacement would rejuvenate the building interior while simultaneously remediating known asbestos-containing materials.

Contamination at existing wood stair rails, visual display boards, casework, and lockers is not yet confirmed. If these materials are classified as PCB Remediation Waste, Westport Middle School can benefit from their removal and replacement. Stair handrails and guard rails do not comply with current codes, and their replacement might be mandated. Westport Middle School appears to favor dry-erase white boards over the original chalkboards. Casework is dated. Lockers at hallways and locker rooms have shown considerable wear and are in need of replacement.

Work to address PCB Bulk Product Materials and PCB Remediation Waste can result in, or expedite, other beneficial improvements to Westport Middle School not directly affected by PCBs. Removal of PCB-containing glazing compound at exterior windows necessitates the complete replacement of the existing single-glazed, thermally deficient, window system – the goal of the original MSBA Green Repair Program project. It is similarly recommended that PCB remediation work include previously proposed replacement of the original exterior door assemblies.

Removal of remaining Tectum form plank above ceiling-mounted unit ventilators requires removal and reinstallation of the existing mechanical equipment. This equipment dates to the building's original construction and has reached its expected lifespan. Rather than re-installing obsolete equipment, it makes sense to take the opportunity to replace the unit ventilators with modern energy-efficient systems.

The removal of existing Tectum form plank as part of the 2011 PCB Source Removal Project left bare (encapsulated) concrete ceilings exposed in typical classroom spaces, as well as in the cafeteria and media center. The original Tectum ceiling finish played an important role in controlling acoustics, and its absence has left hard surfaces that reflect and amplify noise and make it difficult to conduct educational activities. Acoustics negatively impact the learning environment. Any project to accommodate the on-going use of Westport Middle School should absolutely include new ceiling treatments that improve the acoustical environment of interior spaces.

The current EPDM roof system was installed around 1990 and is approaching the end of its expected lifespan. An investment in the long term use of Westport Middle School should include complete roof replacement to ensure that the building envelope continues to protect the interior environment. Roof replacement can include increased insulation thicknesses and installation of a light colored membrane to improve the building's energy efficiency.

Westport Middle School presents a variety of challenges to persons with disabilities. A remediation and renovation project will very likely trigger a requirement in 521 CMR that the entire building be made accessible to the standard of a new building. Though the Massachusetts Architectural Access Board may grant some variances for technologically infeasible improvements, Westport Community Schools should invest in making Westport Middle School universally accessible.

Any renovation project at Westport Middle School must comply with the requirements of the Massachusetts State Building Code. Requirements vary based on the proposed scope and extent of work. The building's structural design may need to be studied in detail to ensure that seismic and lateral bracing is sufficient. The extent of possible structural improvements cannot be determined at this time without identification of the scope for an actual construction project and detailed engineering and analysis.

An automatic sprinkler system may need to be installed throughout the building if a major renovation project is undertaken. The building code includes triggers requiring sprinklers based on the scope of proposed renovation work. The Local Fire Official also enforces Massachusetts General Laws Chapter 148 Section 26G, which applies to the installation of automatic sprinkler systems in non-residential buildings. The Local Fire Official should be consulted early and often during planning for a potential renovation project to determine the applicability of MGL c. 148 s. 26G.

There are a number of alternatives to remediating and renovating Westport Middle School for on-going use. Section L of this Study compares the possible advantages and disadvantages of renovating the existing school versus building a new facility. The existing middle school is larger than the MSBA standard for a new middle school. Specific program

areas for art and music, physical education and health, media center, and dining and food service are all larger than MSBA standards. Westport Middle School also contains a dedicated auditorium space which would not be eligible for reimbursement from MSBA if a new school were to be built. Construction of a new facility the same size as the current middle school would be expected to cost between $33,000,000 and $38,500,000. This does not include the costs for land acquisition, remediation and demolition of the existing structure, and project costs such as designer services fees and project management fees.

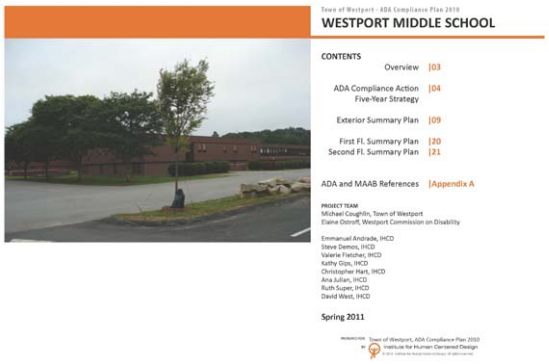
Options for remediating and renovating Westport Middle School range from a low of around $7,500,000 to a high of around $37,900,000. As stated earlier in this Section, a project to fully remove all potential PCB Remediation Waste is infeasible. This Study recommends a combination of removal and encapsulation of PCB-contaminated building materials, along with related beneficial improvements to building assemblies and systems that will support the on-going use of the building as a middle school facility. The specific options recommended in this Study have an estimated probable construction cost of around $16,300,000. It is our intention, however, that Westport Community Schools evaluate the full range of issues and options presented in this Study in order to determine possible solutions that will meet the needs of the community as a whole.

A major renovation project will require the relocation of students, faculty, and staff for at least one school year. Additional project costs, such as designer and management fees, must be considered. On-going PCBs monitoring and adherence to an operations and maintenance program will come at an estimated yearly cost of around $75,000. And the USEPA and state regulators must be included in the planning for a potential remediation and renovation project

CGKV recognizes that public perception will play an important role in determining the future of Westport Middle School. We hope that this Study provides an objective background to help facilitate the community's discussion.

[Page left intentionally blank.]

N. REFERENCES


Town of Westport - ADA Compliance Plan 2010

WESTPORT MIDDLE SCHOOL

CONTENTS

Overview |03

ADA Compliance Action Five-Year Strategy |04

Exterior Summary Plan |09

First Fl. Summary Plan |20
Second Fl. Summary Plan |21

ADA and MAAB References |Appendix A

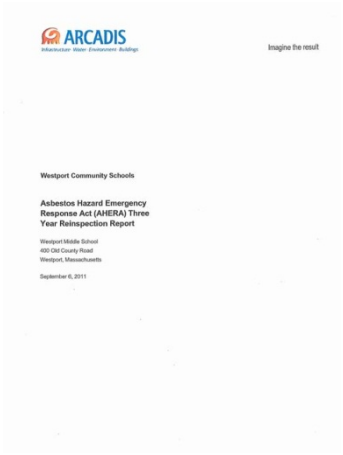
PROJECT TEAM
Michael Coughlin, Town of Westport
Elaine Ostroff, Westport Commission on Disability

Emmanuel Andrade, IHCD
Steve Demos, IHCD
Valerie Fletcher, IHCD
Kathy Gios, IHCD
Christopher Hart, IHCD
Ana Julian, IHCD
Ruth Super, IHCD
David West, IHCD

Spring 2011

PRODUCED BY Town of Westport, ADA Compliance Plan 2010 Institute for Human Centered Design

Andrade, E., et. al., Institute for Human Centered Design. (2011). *Town of Westport – ADA Compliance Plan 2010, Westport Middle School.*


ARCADIS

Infrastructure Water Environment Buildings

Imagine the result

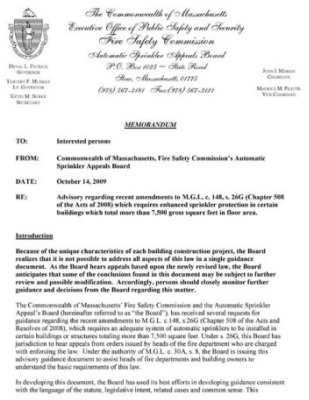
Westport Community Schools

Asbestos Hazard Emergency Response Act (AHERA) Three Year Reinspection Report

Westport Middle School
400 Old County Road
Westport, Massachusetts

September 6, 2011

ARCADIS U.S. (2011). *Asbestos Hazard Emergency Response Act (AHERA) Three Year Reinspection Report, Westport Middle School.*


The Commonwealth of Massachusetts
Executive Office of Public Safety and Security
Fire Safety Commission
Automatic Sprinkler Appeals Board
P.O. Box 1025 – State Road
Stow, Massachusetts 01775
(978) 567-3381 Fax (978) 567-3121

DEVAL L. PATRICK, GOVERNOR
TIMOTHE P. MURRAY, LT. GOVERNOR
KIMBERLEY HARRIS, SECRETARY
JOHN J. MORAN, CHAIRMAN
MARTIN M. PILLETTE, VICE-CHAIRMAN

MEMORANDUM

TO: Interested persons

FROM: Commonwealth of Massachusetts, Fire Safety Commission's Automatic Sprinkler Appeals Board

DATE: October 14, 2009

RE: Advisory regarding recent amendments to M.G.L. c. 148, s. 26G (Chapter 508 of the Acts of 2008) which requires enhanced sprinkler protection in certain buildings which total more than 7,500 gross square feet in floor area.

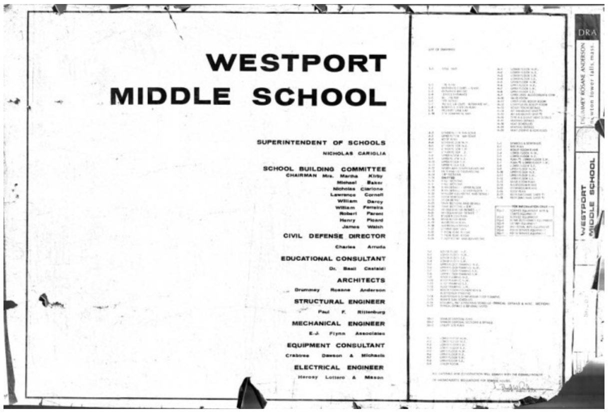
Introduction

Because of the unique characteristics of each building construction project, the Board realizes that it is not possible to address all aspects of this law in a single guidance document. As the Board hears appeals based upon the newly revised law, the Board anticipates that some of the conclusions found in this document may be subject to further review and possible modification. Accordingly, persons should closely monitor further guidance and decisions from the Board regarding this matter.

The Commonwealth of Massachusetts' Fire Safety Commission and the Automatic Sprinkler Appeal's Board (hereinafter referred to as "the Board"), has received several requests for guidance regarding the recent amendments to M.G.L. c.148, s.26G (Chapter 508 of the Acts and Resolves of 2008), which requires an adequate system of automatic sprinklers to be installed in certain buildings or structures totaling more than 7,500 square feet. Under s. 26G, this Board has jurisdiction to hear appeals from orders issued by heads of the fire department who are charged with enforcing the law. Under the authority of M.G.L. c. 30A, s. 8, the Board is issuing this advisory guidance document to assist heads of fire departments and building owners to understand the basic requirements of this law.

In developing this document, the Board has used its best efforts in developing guidance consistent with the language of the statute, legislative intent, related cases and common sense. This

Commonwealth of Massachusetts, Fire Safety Commission, Automatic Sprinkler Appeals Board. (2009). *Memorandum Re: Advisory Regarding Recent Amendments to M.G.L. c. 148, s. 26G (Chapter 508 of the Acts of 2008) Which Requires Enhanced Sprinkler Protection in Certain Buildings Which Total More Than 7,500 Gross Square Feet in Floor Area.*



WESTPORT
MIDDLE SCHOOL

SUPERINTENDENT OF SCHOOLS
NICHOLAS CARIGLIA

SCHOOL BUILDING COMMITTEE
CHAIRMAN Mrs. Martha Kirby
Michael Baker
Nicholas Ciarlone
Lawrence Cornell
William Darcy
William Ferreira
Robert Parent
Henry Picard
James Walsh

CIVIL DEFENSE DIRECTOR
Charles Arruda

EDUCATIONAL CONSULTANT
Dr. Basil Castaldi

ARCHITECTS
Drummey Rosane Anderson

STRUCTURAL ENGINEER
Paul F. Rittenburg

MECHANICAL ENGINEER
E.J. Flynn Associates

EQUIPMENT CONSULTANT
Crabtree Dawson & Michaels

ELECTRICAL ENGINEER
Herosy Lottero & Mason

DRA
DRUMMEY ROSANE ANDERSON
newton lower falls, mass.

WESTPORT
MIDDLE SCHOOL

Drummey Rosane Anderson [Architects]. (1968). *Westport Middle School [Construction Documents Drawings].*

EPA/600/R-11/156
October 2011

Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings

Part 1. Emissions from Selected Primary Sources

Zhishi Guo, Xiaoyu Liu, and Kenneth A. Krebs
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Air Pollution Prevention and Control Division
Research Triangle Park, NC 27711

and

Rayford A. Stinson, Joshua A. Nardin, Robert H. Pope, and Nancy F. Roache
ARCADIS, US Inc.
4915 Prospectus Dr., Suite F
Durham, NC 27709

Guo, Z., Xiaoyu, L., and Krebs, K.A., U.S. Environmental Protection Agency, and Stinson, R.A., Nardin, J.A., Pope, R.H., and Roache, N.F., ARCADIS US, Inc. (2011). *Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings, Part 1. Emissions from Selected Primary Sources*, EPA/600/R-11/156.

EPA/600/R-11/156A
January 2012

Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings

Part 2. Transport from Primary Sources to Building Materials and Settled Dust

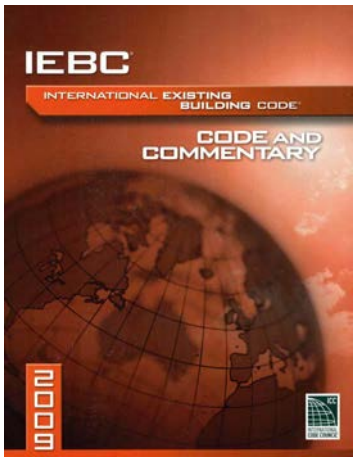
Zhishi Guo, Xiaoyu Liu, Kenneth A. Krebs, and Dale J. Greenwell
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Air Pollution Prevention and Control Division
Research Triangle Park, NC 27711

and

Nancy F. Roache, Rayford A. Stinson, Joshua A. Nardin, and Robert H. Pope
ARCADIS U.S. Inc.
Durham, NC 27709

U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Cincinnati, OH 45268

Guo, Z., Xiaoyu, L., Krebs, K.A., and Greenwell, D.J., U.S. Environmental Protection Agency, and Roache, N.F., Stinson, R.A., Nardin, J.A., and Pope, R.H., ARCADIS US, Inc. (2012). *Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings, Part 2. Transport from Primary Sources to Building Materials and Settled Dust*, EPA/600/R-11/156A.



International Code Council. (2009). *International Existing Building Code, Code and Commentary.*


Limited Hazardous Building Materials Inspection
Westport Middle School
400 Old County Road
Westport, MA

CGKV Architects, Inc.
Somerville, Massachusetts

May 25, 2011

FUSS & O'NEILL

May, R.L., et. al., Fuss & O'Neill EnviroScience. (2011). *Limited Hazardous Building Materials Inspection, Westport Middle School.*


Polychlorinated Biphenyls (PCBS) Source Removal Project Report and Management Plan
Westport Middle School
400 Old Colony Road, Westport, Massachusetts

Westport Community Schools
17 Main Road, Westport, MA

April 1, 2013

FUSS & O'NEILL
EnviroScience, LLC

May, R.L., et. al., Fuss & O'Neill EnviroScience. (2013). *Polychlorinated Biphenyls (PCBs) Source Removal Project Report and Management Plan, Westport Middle School.*


REGULATION FILING AND PUBLICATION

521 CMR

ARCHITECTURAL ACCESS BOARD

521 CMR PART A ADMINISTRATION
PART B BUILDING TYPES
PART C EXTERIOR
PART D INTERIOR
PART E DWELLING UNITS

1/27/2006

Secretary of the Commonwealth (MA). (2006). *Code of Massachusetts Regulations, 521 CMR, Architectural Access Board.*


THE COMMONWEALTH OF MASSACHUSETTS
William Francis Galvin, Secretary of the Commonwealth
State Publications and Regulations

REGULATION FILING AND PUBLICATION

780 CMR

MASSACHUSETTS STATE BUILDING CODE
STATE BOARD OF BUILDING REGULATIONS & STANDARDS

This is the
Massachusetts Amendments
to the International Building Code 2009
(Basic/Commercial)
EIGHTH EDITION
as adopted by the
State Board of Building Regulations and Standards and filed with the
Office of the Secretary of the Commonwealth

8/6/2010

$20.00

WILLIAM FRANCIS GALVIN
Secretary of the Commonwealth

Secretary of the Commonwealth (MA). (2010). *Code of Massachusetts Regulations, 780 CMR, Massachusetts Amendments to the International Building Code 2009, (Basic/Commercial), Eighth Edition.*

Thomas, K., Xue, J., Williams, R., Jones, P., and Whitaker, D., U.S. Environmental Protection Agency. (2012). *Polychlorinated Biphenyls (PCBs) in School Buildings: Sources, Environmental Levels, and Exposures,* EPA/600/R-12/051.

EPA science in ACTION
www.epa.gov
BUILDING A SCIENTIFIC FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS

Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination in Buildings Emissions from Selected Primary and Secondary Sources

Problem: Polychlorinated biphenyls (PCBs) are a class of organic chemicals, known as congeners, that have been used in a variety of commercial products. PCBs were used in caulking, electronics, fluorescent light ballasts and other building materials from the 1950s to the late 1970s. Buildings built or renovated during that time may contain PCBs in caulking and other materials.

In 1979, the U.S. Environmental Protection Agency (EPA) banned the commercial production of PCBs, citing health and environmental concerns. Health concerns related to PCB exposure include, but are not limited to, cancer, reproductive effects and neurological effects.

PCBs are regulated by the Toxic Substances Control Act (TSCA) Title 40, Part 761 (enacted in 1976). Current regulations require the removal of materials using PCBs if their PCB content is above a concentration of 50 parts per million (ppm). However, there is no federal requirement for testing of materials so the amount of PCBs in materials and PCB emissions are often unknown.

In response to concerns raised by the public about PCBs in schools, EPA announced in the fall of 2009 a series of steps that building owners and school administrators should take to reduce exposure to PCBs that may be found in caulk and other materials in buildings constructed during this timeframe. In addition, EPA scientists began conducting research in the following areas:

- Characterization of potential sources of PCB exposures in schools (caulk and other materials).
- Investigating the relationship of these PCB sources to PCB concentrations in air, dust, and soil.
- Evaluation of mitigation methods to reduce exposures to PCBs in caulk and other sources.

This fact sheet summarizes EPA's test results for PCB emissions from primary indoor sources, with emphasis on PCB-containing caulk and light ballasts, secondary sources, and the factors that may affect emissions.

Action: EPA conducted research to address specific questions related to the scope of PCBs in caulking materials and their potential effect on the quality of indoor environments. The main objectives of these research studies were to collect new data to reduce the uncertainty in models by understanding the behavior of PCB sources in building materials, including caulking materials and light ballasts, and secondary sources, to support risk management decisions, and the development and refinement of exposure assessment models such as the Stochastic Human Exposure and Dose Simulation (SHEDS) model.

Results: In the study on primary sources, PCBs were present in the 12 field caulk samples tested at concentrations ranging from <10 to 136,000 µg/g. The PCB emission rates (i.e., off-gassing rates) were proportional to the PCB content in the caulk, and PCB emissions increase as the temperature increases. There were significant differences between the congener profiles of caulk and air samples, with the more volatile congeners being present at higher proportions in the air samples. Emission factors for congeners in caulk can be estimated as long as the content in the caulk and the vapor pressure are known. However, the uncertainty associated with the PCB concentration in air for Aroclors needs further evaluation. (Commercial PCB products

1 U.S. Environmental Protection Agency
Office of Research and Development

U.S. Environmental Protection Agency. (Undated). *Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination in Buildings, Emissions from Selected Primary and Secondary Sources [Brief].*

[Page left intentionally blank.]

O. APPENDICES

1. Estimate of Probable Costs Calculations

2. Large Format Drawings (reduced to 11 x 17)

[Page left intentionally blank.]

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
G. REMOVAL OF REMAINING PCB BULK PRODUCTS				
1. Exterior Doors - Exterior and Interior Caulk:				
a. Two-story height exterior door assemblies				
i. Quantity: Remove, and subsequently replace, caulk at 5 exterior door assemblies x (28.5 LF exterior caulk + 28.5 LF interior caulk each) = approximately 285 LF total	285	LF	$44.88	$12,790.80
b. One-story exterior door assemblies				$0.00
i. Quantity: Remove, and subsequently replace, caulk at 2 exterior door assemblies x (14.5 LF exterior caulk + 14.5 LF interior caulk each) = approximately 58 LF total	58	LF	$44.88	$2,603.04
c. Aluminum-framed glazed storefront assembly				$0.00
i. Quantity: Remove, and subsequently replace, caulk at 1 storefront assembly x (76 LF exterior caulk + 76 LF interior caulk) = approximately 152 LF total	152	LF	$44.88	$6,821.76
2. Exterior Windows - Interior Glazing Compound:				0.00
a. Type 'A/A1' windows				0.00
i. Quantity: Remove, and subsequently replace, 144 Type 'A/A1' windows x 18 SF each = approximately 2,592 SF total	2,592	SF	$133.28	345,461.76
b. Type 'B' windows				0.00
i. Quantity: Remove, and subsequently replace, 95 Type 'B' windows x 34 SF each = approximately 3,230 SF total	3,230	SF	$133.28	430,494.40
c. Interior wood and Corian trim				0.00
i. Quantity: Remove, and subsequently replace, interior wood trim and blocking at 144 Type 'A/A1' windows x 15 LF each = approximately 2,160 LF total	2,160	LF	$32.64	70,502.40
ii. Quantity: Remove, and subsequently replace, interior Corian stools at 144 Type 'A/A1' windows x 3 LF each = approximately 432 LF total	432	LF	$65.28	28,200.96
3. Mastic Above Tectum Form Plank:				0.00
a. Main Stairways				0.00
i. Quantity: Remove, and subsequently encapsulate, Tectum ceilings at 5 stairways x 300 SF of ceiling area each = approximately 1,500 SF of form plank and mastic removal total	1,500	SF	$33.32	49,980.00
ii. Quantity: Remove, and subsequently replace, brick veneer at 5 stairways x 3 courses x 33 LF (average) of veneer brick side wall x 2 walls each = approximately 330 LF total	330	LF	$231.20	76,296.00
b. Custodial and Receiving Area				0.00
i. Quantity: Remove Tectum form plank and subsequently encapsulate exposed concrete ceiling = approximately 1,600 SF total	1,600	SF	$33.32	53,312.00
ii. Quantity: Remove, and subsequently replace, suspended ceiling system = approximately 230 SF total	230	SF	$24.48	5,630.40
c. Kitchen Area				
i. Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at serving area = approximately 300 SF total	300	SF	$46.92	14,076.00
ii. Quantity: Remove Tectum form plank above plaster soffit, and subsequently encapsulate concrete, at Teacher Dining = approximately 100 SF total	100	SF	$46.92	4,692.00

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
iii. Quantity: Remove Tectum form plank above suspended ceiling, and subsequently encapsulate concrete, at ancillary areas = approximately 500 SF total.	500	SF	$46.92	23,460.00
iv. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above refrigerators and freezers = approximately 100 SF total.	100	SF	$33.32	3,332.00
d. Storage Room 153				0.00
i. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, at Storage Room 153 = approximately 450 SF total.	450	SF	$33.32	14,994.00
e. Tops of Partitions				0.00
i. Quantity: Remove Tectum form plank, and subsequently provide new wood blocking and trim, above existing partitions = approximately 2,425 linear feet total.	2,425	LF	$40.80	98,940.00
f. Above Mechanical Equipment				0.00
i. Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at 24 classroom unit vents x 22 SF (average) each = approximately 528 SF total	24	EA	$3,400.00	81,600.00
ii. Quantity: Remove Tectum form plank, including removal and reinstallation of mechanical equipment and subsequent encapsulation of concrete ceiling slabs, at mechanical equipment and ductwork at 6 other miscellaneous interior locations = approximately 600 SF total	6	EA	$7,480.00	44,880.00
g. Above Ceiling Mounted Soffits				0.00
i. Quantity: Remove 5 movable partition assemblies = approximately 1,500 SF total.	1,500	SF	$6.80	10,200.00
ii. Quantity: Remove soffit assemblies and Tectum form plank, and subsequently encapsulate concrete, at 8 soffit assemblies = approximately 1,100 SF total.	1,100	SF	$40.12	44,132.00
iii. Quantity: Provide 137 LF new partitions (double-sided) x 11'-0" height = approximately 1,500 SF total.	1,500	SF	$34.00	51,000.00
h. Above Teacher Closets				0.00
i. Quantity: Remove Tectum form plank, and subsequently encapsulate concrete, above 8 closets x 5 SF each = approximately 40 SF total.	40	SF	$46.92	1,876.80
i. Concealed Above Suspended Ceilings				0.00
i. Quantity: Remove Tectum form plank above suspended ceilings (including removal and reinstallation of suspended ceiling systems), and subsequently encapsulate concrete = approximately 1,475 SF x 1.20 (contingency) = approximately 1,770 SF total	1,770	SF	$33.32	58,976.40
j. Residue From 2011 Project				0.00
i. Quantity: Allowance for removal of Tectum form plank and associated mastic residue remaining from 2011 project = approximately 200 LF total.	200	LF	$34.00	6,800.00
4. Interior Caulk:				0.00
a. Concealed interior caulk				0.00
i. Quantity: Allowance for removal, and subsequent replacement, of concealed interior caulk = approximately 200 LF total.	200	LF	$44.88	8,976.00
5. Foam Filler Between Interior Concrete Columns / Beams and Interior Plaster Walls:				0.00
a. Concealed foam filler				0.00

	QUANTITY	UNIT	UNIT COST	TOTAL
i. Quantity: Allowance for removal of concealed foam filler = approximately 500 LF total.	500	LF	$40.80	20,400.00
				0.00
H. REMOVAL OR ENCAPSULATION OF PCB REMEDIATION WASTES				0.00
				0.00
1. Exterior Window Openings:				0.00
a. *Removal:* Existing window systems				0.00
b. *Removal:* Brick at jambs and sill				0.00
i. Quantity: Remove one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.	1,814	LF	$61.20	111,016.80
ii. Quantity: Remove one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.	92	LF	$61.20	5,630.40
iii. Quantity: Remove 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.	701	LF	$61.20	42,901.20
iv. Quantity: Remove one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.	432	LF	$43.52	18,800.64
v. Quantity: Remove one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.	428	LF	$43.52	18,626.56
c. *Removal:* Concrete at beams				0.00
i. Quantity: Remove 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.	432	LF	$54.40	23,500.80
ii. Quantity: Remove 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.	428	LF	$54.40	23,283.20
d. *Removal:* Restoration of brick and masonry				0.00
i. Quantity: Rebuild one-half brick width x one wythe depth of brick veneer at 288 Type 'A/A1' jambs x 6.3 LF each = approximately 1,814 LF total.	1,814	LF	$129.20	234,368.80
ii. Quantity: Rebuild one-half brick width x 1'-4" depth of brick veneer at 12 Type 'B' end jambs x 7.7 LF each = approximately 92 LF total.	92	LF	$129.20	11,886.40
iii. Quantity: Rebuild 89 brick piers between Type 'B' windows at 11-1/2" wide x 1'-4" deep x 7'-8" high each.	2,495	SF	$81.60	203,592.00
iv. Quantity: Rebuild one rowlock brick course at 144 Type 'A/A1' sills x 3 LF each = approximately 432 LF total.	432	LF	$47.60	20,563.20
v. Quantity: Rebuild one rowlock brick course (cut at an angle) at 95 Type 'B' sills x 4.5 LF each = approximately 428 LF total.	428	LF	$47.60	20,372.80
vi. Quantity: Pin and patch 1/2" depth x 4" x 3'-0" width concrete at 144 Type 'A/A1' windows = approximately 432 LF total.	432	LF	$43.52	18,800.64
vii. Quantity: Pin and patch 1/2" depth x 4" x 4'-6" width concrete at 95 Type 'B' windows = approximately 428 LF total.	428	LF	$43.52	18,626.56
e. *Removal:* (Alternative for curtain wall at Type 'B')				0.00
f. *Encapsulation:* Encapsulation with epoxy coating				0.00

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
g. *Encapsulation:* Encapsulation with metal composite cladding				0.00
i. Quantity: Clad the perimeter of all window openings with metal composite material system = approximately 6,700 SF total.	6,700	SF	$29.92	200,464.00
2. Exterior Door Openings:				0.00
a. *Removal:* Existing door systems				0.00
i. Quantity: Remove 5 two-story exterior door assemblies x 150 SF each = approximately 750 SF total	5	EA	$1,020.00	5,100.00
ii. Quantity: Remove 2 one-story exterior door assemblies x 98 SF each = approximately 196 SF total	2	EA	$680.00	1,360.00
iii. Quantity: Remove 1 storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total	416	SF	$16.32	6,789.12
b. *Removal:* Brick and concrete				0.00
i. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total	186	LF	$61.20	11,383.20
ii. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total	42	LF	$61.20	2,570.40
iii. Quantity: Remove one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total	31	LF	$61.20	1,897.20
iv. Quantity: Remove 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total	19	LF	$54.40	1,033.60
c. *Removal:* Restoration of brick and concrete				0.00
i. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 18.6 LF vertical band x 2 bands per assembly x 5 two-story exterior door assemblies = approximately 186 LF total	186	LF	$129.20	24,031.20
ii. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.5 LF vertical band x 2 bands per assembly x 2 one-story exterior door assemblies = approximately 42 LF total	42	LF	$129.20	5,426.40
iii. Quantity: Rebuild one wythe of brick veneer x 1'-4" wide x 10.4 LF vertical band x 3 bands at receiving area storefront assembly = approximately 31 LF total	31	LF	$129.20	4,005.20
iv. Quantity: Pin and patch 1/2" depth x 10" x 9'-4" width concrete at 2 one-story exterior door assemblies = approximately 19 LF total.	19	LF	$61.20	1,162.80
d. *Removal:* Replacement of exterior door assemblies				0.00
i. Quantity: Provide 5 new two-story exterior door assemblies x 150 SF each = approximately 750 SF total.	5	EA	### ### ###	51,000.00
ii. Quantity: Provide 2 new one-story exterior door assemblies x 98 SF each = approximately 196 SF total.	2	EA	$6,800.00	13,600.00
iii. Quantity: Provide 1 new storefront assembly at receiving area, including soffits and fascia = approximately 416 SF total.	416	SF	$102.00	42,432.00
e. *Removal:* Remove and reinstall heating equipment				0.00

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
i. Quantity: Remove and reinstall cabinet unit heaters and plywood enclosures at 5 exterior door assemblies.	5	EA	$1,020.00	5,100.00
ii. Quantity: Remove and reinstall approximately 20 LF finned tube radiation and plywood enclosure at receiving area storefront.	20	LF	$170.00	3,400.00
f. *Encapsulation:* Encapsulation with metal composite cladding				0.00
i. Quantity: Clad all exterior door assembly openings with metal composite material system = approximately 560 SF total.	560	SF	$29.92	16,755.20
3. Exterior Concrete Walkways:				0.00
a. *Removal:* Remove and replace exterior concrete walkways				0.00
i. Quantity: Remove and replace reinforced concrete slab-on-grade walkways at seven building entrances = approximately 1,430 SF total.	1,430	SF	$47.60	68,068.00
b. *Encapsulation:* [Not applicable]				0.00
4. Exterior Soils:				0.00
a. *Removal:* Remove, replace, and re-seed soils at building perimeter				0.00
i. Quantity: Remove PCB-contaminated soil at the building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.	148	CY	$340.00	50,320.00
ii. Quantity: Provide new soil at building perimeter, 8,000 SF x 6" depth = approximately 148 cubic yards total.	148	CY	$59.84	8,856.32
iii. Quantity: Re-seed at building perimeter = approximately 8,000 SF total.	8,000	SF	$0.16	1,305.60
b. *Encapsulation:* [Not applicable]				0.00
5. Brick and Concrete at Interior Caulk and Joint Fillers:				0.00
a. *Removal:* Joint at brick to concrete at stairways				0.00
i. Quantity: Remove, and subsequently replace, backer rod and caulk between brick veneer and concrete columns, 11 LF x 2 joints per stairway x 5 stairways x 2 floors = approximately 220 LF total	220	LF	$40.80	8,976.00
ii. Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 8" width x 11 LF per side x 2 sides x 5 stairways x 2 floors = approximately 220 LF total	220	LF	$217.60	47,872.00
iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 11 lf per side x 2 sides x 5 stairways x 2 floors = approximatly 220 lf total	220	LF	$183.60	40,392.00
iv. Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.	600	SF	$24.48	14,688.00
v. Quantity: Remove, and subsequently reinstall, 3 steel-framed door, fixed lite, and fascia assemblies (including backer rod and caulk) x 100 SF each = approximately 300 SF total	3	EA	$3,740.00	11,220.00
b. *Encapsulation:* Joint at brick to concrete at stairways				0.00
i. Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 2 columns per stairway x 5 stairways x 2 floors = approximately 340 SF total	340	SF	$6.12	2,080.80
ii. Quantity: Encapsulate exposed edge of brick with epoxy paint x 4 SF x 2 walls x 3 landings = approximately 24 SF total.	24	SF	$6.12	146.88

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
iii. Quantity: Encapsulate exposed contiguous brick wall with epoxy paint x 55 SF x 2 walls x 7 landings = approximately 770 SF total.	770	SF	$6.12	4,712.40
iv. Quantity: Remove, and subsequently reinstall, 60 SF suspended ceiling system x 5 landings x 2 floors = approximately 600 SF total.	600	SF	$24.48	14,688.00
c. *Removal:* Joint at brick to concrete at window piers				0.00
i. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 2 edges per column x 21 columns = approximately 420 LF total	420	LF	$97.92	41,126.40
ii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x 10 LF per edge x 1 edge per column x 5 columns = approximately 50 LF total	50	LF	$97.92	4,896.00
d. *Encapsulation:* Joint at brick to concrete at window piers				0.00
i. Quantity: Encapsulate concrete columns with epoxy paint x 33 SF per column (average) x 21 columns = approximately 693 SF total.	693	SF	$6.12	4,241.16
ii. Quantity: Encapsulate concrete columns with epoxy paint x 17 SF per column (average) x 5 columns = approximately 85 SF total.	85	SF	$6.12	520.20
e. *Removal:* Joint at steel frames to brick veneer			$0.00	0.00
i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 15 large openings x 100 SF per opening (average) = approximately 1,500 SF total.	15	EA	$3,740.00	56,100.00
ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 4 small openings x 25 SF per opening (average) = approximately 100 SF total.	4	EA	$2,108.00	8,432.00
iii. Quantity: Remove, and subsequently rebuild, one brick veneer wythe x 12" width x 11 LF height per jamb (average) x 42 jambs = approximately 462 LF total.	462	LF	$217.60	100,531.20
f. *Encapsulation:* Joint at steel frames to brick veneer				0.00
i. Quantity: Encapsulate exposed brick wall jamb with epoxy paint "accent band", 12" wide x 11 LF per jamb x 38 jambs x 2 sides each = approximately 836 SF total.	836	SF	$6.12	5,116.32
g. *Removal:* Joint at steel frames to reinforced brick masonry walls				0.00
i. Quantity: Remove, and subsequently reinstall, steel-framed door and fixed-lite assemblies (including backer rod and caulk) at 15 openings x 50 SF per opening (average) = approximately 750 SF total.	15	ea	$3,060.00	45,900.00
ii. Quantity: Remove, and subsequently parge, 1/2" depth brick x 12" total width x 23 LF (jambs + head, average) x 15 openings = approximately 345 LF total.	345	LF	$95.20	32,844.00
h. *Encapsulation:* Joint at steel frames to reinforced brick masonry walls				0.00
i. Quantity: Encapsulate exposed brick jambs and heads with epoxy paint "accent band", 12" wide x 23 LF per opening (average) x 15 openings x 2 sides each = approximately 690 SF total.	690	SF	$6.80	4,692.00
i. *Removal:* Joint at steel frames to concrete columns				0.00
i. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 52 large openings x 110 SF per opening (average) = approximately 5,720 SF total.	52	EA	$3,740.00	194,480.00
ii. Quantity: Remove, and subsequently reinstall, steel door and fixed-lite assemblies (including backer rod and caulk) at 38 small openings x 25 SF per opening (average) = approximately 950 SF total.	38	EA	$2,108.00	80,104.00
iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 10" width x 11 LF per jamb x 130 jambs = approximately 1,430 LF total.	1,430	LF	$95.20	136,136.00

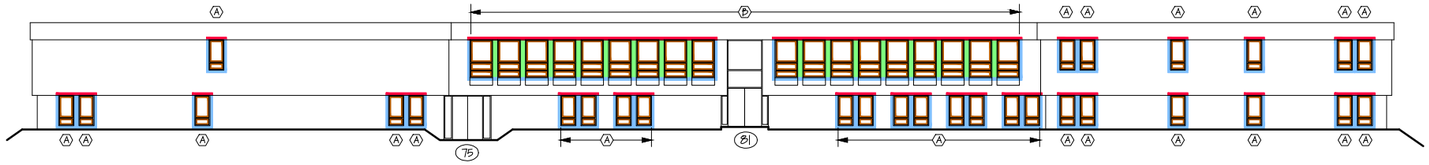
WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
j. *Encapsulation:* Joint at steel frames to concrete columns				0.00
i. Quantity: Encapsulate concrete columns with epoxy paint x 30 SF per column (average) x 130 columns = approximately 3,900 SF total.	3,900	SF	$6.80	26,520.00
k. *Removal:* Expansion / control joints in reinforced brick masonry walls				0.00
i. Quantity: Remove, and subsequently replace, backer rod and caulk at expansion / control joints x 11 LF height x 20 joints = approximately 220 LF total	220	LF	$61.20	13,464.00
ii. Quantity: Remove, and subsequently parge, 1/2" depth brick x 8" total width (4" either side of joint) x 11 LF height x 20 joints = approximately 220 LF total	220	LF	$95.20	20,944.00
l. *Encapsulation:* Expansion / control joints in reinforced brick masonry walls				0.00
i. Quantity: Encapsulate brick with epoxy paint x 12" wide 11 LF tall x 20 joints = approximately 220 SF total.	220	SF	$6.12	1,346.40
m. *Removal:* Joint at concrete columns and beams to plaster				0.00
i. Quantity: Remove, and subsequently parge, 1/2" depth concrete x 4" width x approximately 12,000 LF = approximately 12,000 LF total.	12,000	LF	$97.92	1,175,040.00
ii. Quantity: Remove, and subsequently re-build, steel framing and plaster walls immediately adjacent to concrete columns and beams = approximately 12,000 LF	12,000	LF	$68.00	816,000.00
n. *Encapsulation:* Joint at concrete columns and beams to plaster				0.00
i. Quantity: Encapsulate 136 concrete columns with epoxy paint x 24" wide (average) 11 LF tall = approximately 2,992 SF total.	2,992	SF	$6.12	18,311.04
ii. Quantity: Encapsulate 127 concrete columns with epoxy paint x 48" wide (average) 11 LF tall = approximately 5,588 SF total.	5,588	SF	$6.12	34,198.56
iii. Quantity: Encapsulate concrete beams with epoxy paint x 30" wide (average) 2,520 LF long = approximately 6,300 SF total.	6,300	SF	$6.12	38,556.00
iv. Quantity: Encapsulate concrete beams with epoxy paint x 52" wide (average) 1,325 LF long = approximately 5,742 SF total.	5,742	SF	$6.12	35,141.04
6. Concrete Columns, Beams, and Slabs:				0.00
a. *Removal:* Remove and parge concrete columns, beams, and slabs				0.00
i. Quantity: Remove, and subsequently parge, 1/2" depth concrete at 136 columns x 24" width (average) x 11 tall LF each = approximately 2,992 SF total	2,992	SF	$68.00	203,456.00
ii. Quantity: Remove, and subsequently parge, 1/2" depth concrete at 258 columns x 48" width (average) x 11 tall LF each = approximately 11,355 SF total	11,355	SF	$68.00	772,140.00
iii. Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 30" width (average) x 3,120 LF = approximately 7,800 SF total.	7,800	SF	$68.00	530,400.00
iv. Quantity: Remove, and subsequently parge, 1/2" depth concrete at beams x 52" width (average) x 8,560 LF = approximately 37,093 SF total.	37,093	SF	$68.00	2,522,324.00
v. Quantity: Remove, and subsequently parge, 1/2" depth concrete at ceilings = approximately 85,175 SF total.	85,175	SF	$68.00	5,791,900.00
b. *Encapsulation:* Encapsulate concrete with epoxy coating				0.00
i. Quantity: Encapsulate concrete columns with epoxy paint at 394 columns = approximately 14,347 SF total.	14,347	SF	$6.12	87,803.64
ii. Quantity: Encapsulate concrete beams with epoxy paint = approximately 44,893 SF total.	44,893	SF	$6.12	274,745.16
iii. Quantity: Encapsulate concrete ceilings with epoxy paint = approximately 85,175 SF total.	85,175	SF	$6.12	521,271.00
7. Interior Brick Walls:				0.00

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
a. *Removal:* Remove and re-build brick walls at Type 'B' windows				0.00
i. Quantity: Remove, and subsequently reinstall, 531 LF of finned tube radiation with plywood enclosure = approximately 531 LF total.	531	LF	$34.00	18,054.00
ii. Quantity: Remove, and subsequently rebuild, one interior wythe of brick veneer x 1'-4" high x 531 LF = approximately 708 SF total.	531	LF	$190.40	101,102.40
b. *Removal:* Remove and re-build brick walls at stairways				0.00
i. Quantity: Remove, and subsequently reinstall, 22 LF wall-mounted handrail x 5 stairways = approximately 110 LF total.	110	LF	$190.40	20,944.00
ii. Quantity: Remove, and subsequently rebuild, 550 SF brick veneer x 2 walls x 5 stairways = approximately 5,500 SF total.	5,500	SF	$74.80	411,400.00
c. *Removal:* Remove and parge reinforced brick masonry walls				0.00
i. Quantity: Remove, and subsequently reinstall, 260 LF of existing lockers = approximately 260 LF total.	260	LF	$13.60	3,536.00
ii. Quantity: Remove, and subsequently reinstall, 100 LF of existing shelving = approximately 100 LF total.	100	LF	$6.80	680.00
iii. Quantity: Remove, and subsequently parge, 1/2" depth of existing brick walls = approximately 11,100 SF total.	11,100	SF	$61.20	679,320.00
d. *Encapsulation:* Encapsulate interior brick walls with epoxy coating				0.00
i. Quantity: Encapsulate brick walls below Type 'B' window sills with epoxy paint = approximately 708 SF total.	708	SF	$6.12	4,332.96
ii. Quantity: Encapsulate brick walls at stairways with epoxy paint = approximately 5,500 SF total.	5,500	SF	$6.12	33,660.00
iii. Quantity: Encapsulate brick walls at Lower and Upper Level main corridors with epoxy paint = approximately 11,100 SF total.	11,100	SF	$6.12	67,932.00
8. Painted Plaster Walls:				0.00
a. *Removal:* Remove and replace plaster and rock lath				0.00
i. Quantity: Remove, and subsequently reinstall, wall mounted items such as chalkboards, white boards, and tack boards, 133 boards x 42.5 SF (average) = approximately 5,650 SF total	133	EA	$170.00	22,610.00
ii. Quantity: Remove painted plaster and rock lath wall surfaces = approximately 110,000 SF total.	110,000	SF	$10.20	1,122,000.00
iii. Quantity: Provide new blue board with skimcoat plaster, painted = approximately 110,000 SF total.	110,000	SF	$10.88	1,196,800.00
b. *Encapsulation:* Encapsulate interior plaster walls with epoxy coating				0.00
i. Quantity: Encapsulate painted plaster walls with epoxy paint = approximately 110,000 SF total.	110,000		$5.44	598,400.00
9. Interior Steel-Framed Door and Fixed Lite Assemblies:				0.00
a. *Removal:* Remove and replace glass and stops				0.00
i. Quantity: Remove, and subsequently replace, glass and stops at fixed lite assemblies = approximately 4,300 SF total.	4,300	SF	$50.32	216,376.00
b. *Removal:* Strip and re-paint steel frames and doors				0.00
i. Quantity: Strip, and subsequently re-paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.	262	EA	$204.00	53,448.00
ii. Quantity: Strip, and subsequently re-paint, steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.	8,500	LF	$32.64	277,440.00
c. *Removal:* [Remove and replace steel frame assemblies]				0.00
d. *Encapsulation:* Encapsulate glazing compound with new sealant				0.00
i. Quantity: Provide new sealant at perimeter of all fixed lite panes = approximately 11,750 LF total.	11,750	LF	$6.12	71,910.00

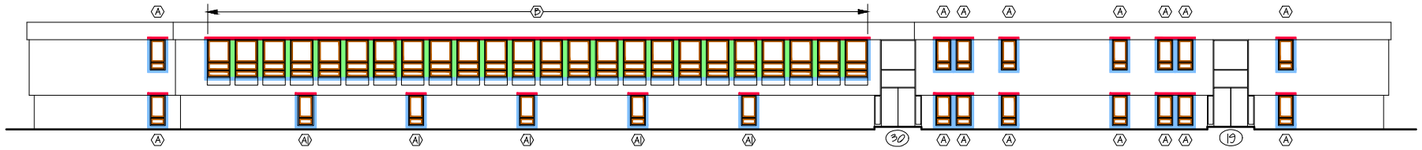
	QUANTITY	UNIT	UNIT COST	TOTAL
ii. Quantity: Encapsulate with epoxy paint, 525 LF wood rails x 9" surface height (including depth) x 2 sides = approximately 788 SF total.	788	SF	$6.12	4,822.56
e. *Encapsulation:* Encapsulate steel frames and doors with epoxy coating				0.00
i. Quantity: Encapsulate with epoxy paint, 262 hollow metal doors x 24 SF each (average) x 2 sides = approximately 6,288 SF total.	262	EA	$142.80	37,413.60
ii. Quantity: Encapsulate with epoxy paint steel frames (2" faces x 6" depth, average) = approximately 8,500 LF total.	8,500	LF	$20.40	173,400.00
10. Acoustical Tile Ceilings and Plywood Fascias:				
a. *Removal:* Remove and replace suspended ceiling system				
i. Quantity: Remove, and subsequently replace, complete suspended acoustical ceiling tile system = approximately 29,800 SF total.	29,800	SF	$14.28	425,544.00
ii. Quantity: Remove, and subsequently reinstall, ceiling-mounted fixtures and devices = [allowance]	29,800	SF	$5.44	162,112.00
b. *Removal:* Remove and reconstruct fascias				0.00
i. Quantity: Remove, and subsequently replace, plywood fascia assemblies, 145 LF x 1'-0" high (average) = approximately 145 SF total.	145	SF	$47.60	6,902.00
ii. Quantity: Remove, and subsequently replace, plywood fascia assemblies, 833 LF x 3'-0" high (average) = approximately 2,500 SF total.	2,500	SF	$47.60	119,000.00
iii. Quantity: Remove, and subsequently replace, plywood fascia and soffit assemblies at windows, 261 LF x 1'-0" high x 1'-0" deep (average) = approximately 522 SF total	522	SF	$47.60	24,847.20
c. *Encapsulation:* [Suspended ceiling system - not applicable]				0.00
d. *Encapsulation:* Encapsulate fascias with epoxy coating				0.00
i. Quantity: Paint plywood fascias with epoxy coating = approximately 3,167 SF total.	3,167		$6.12	19,382.04
11. Interior Floors:				0.00
a. *Removal:* Remove and replace VCT/VAT flooring				0.00
i. Quantity: Remove, and subsequently replace, existing VCT and VAT = approximately 89,500 SF total.	89,500	SF	$11.22	1,004,190.00
b. *Removal:* Remove wood floors and replace with VCT				0.00
i. Quantity: Remove existing wood flooring and subsequently replace with new plywood underlayment and VCT = approximately 5,500 SF total.	5,500	SF	$25.84	142,120.00
c. *Removal:* Remove and replace resilient base				0.00
i. Quantity: Remove, and subsequently replace, existing resilient base = approximately 12,000 LF total.	12,000	LF	$7.82	93,840.00
d. *Encapsulation:* [Resilient flooring and base - not applicable]				0.00
e. *Encapsulation:* [Wood flooring - not applicable]				0.00
12. Miscellaneous Interior Items:				0.00
a. *Removal:* [Miscellaneous interior caulk]				0.00
b. *Encapsulation:* [Miscellaneous interior caulk]				0.00
c. *Removal:* [Interior folding partitions – included in G.3.g]				0.00
d. *Encapsulation:* [Interior folding partitions – not applicable]				0.00
e. *Removal:* Interior wood rails and trim				0.00
i. Quantity: Remove, and subsequently replace, wood panel guardrails / handrails at stairways = approximately 175 LF total.	175	LF	$326.40	57,120.00
ii. Quantity: Remove, and subsequently replace, wall-mounted wood handrails at stairways = approximately 200 LF total.	200	LF	$142.80	28,560.00
iii. Quantity: Remove existing 2x8 wood handrails and replace with guardrails / handrails at stairways = approximately 60 LF total.	60	LF	$142.80	8,568.00
f. *Encapsulation:* Interior wood rails and trim				0.00

WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
i. Quantity: Encapsulate wood panel guardrails at stairways with epoxy paint. 175 LF x 2'-0" high (average) x 2 sides = approximately 750 SF total.	750	SF	$6.12	4,590.00
ii. Quantity: Encapsulate wood handrails at stairways with epoxy paint = approximately 260 LF total.	260	LF	$8.16	2,121.60
g. *Removal:* Remove and replace visual display boards				0.00
i. Quantity: Remove, and subsequently replace, 133 visual display boards x 42.5 SF each (average) = approximately 5,650 SF total.	5,650	SF	$29.92	169,048.00
h. *Encapsulation:* [Encapsulate visual display boards – not applicable]				0.00
i. *Removal:* Remove and replace interior casework				0.00
i. Remove, and subsequently replace, base cabinets with countertop (average) = approximately 930 LF total.	930	LF	$408.00	379,440.00
j. *Encapsulation:* [Encapsulate interior casework – not applicable]				0.00
k. *Removal:* Remove and replace metal lockers				0.00
i. Quantity: Remove, and subsequently replace, typical corridor lockers x 670 LF x 5'-0" height (average) = approximately 670 LF total.	670	LF	$326.40	218,688.00
ii. Quantity: Remove, and subsequently replace, gymnasium (locker room) lockers x 370 LF x 5'-0" height (average) = approximately 370 LF total.	370	LF	$326.40	120,768.00
l. *Encapsulation:* Encapsulate metal lockers with epoxy coating				0.00
i. Quantity: Encapsulate existing metal lockers, outside and inside, with epoxy paint x 1,040 LF x 5'-0" height (average) = approximately 1,040 LF total	1,040	LF	$47.60	49,504.00
				0.00
I. RECOMMENDED FACILITY IMPROVEMENTS				0.00
				0.00
1. Building Envelope:				0.00
a. Remove existing and provide complete new roof system				0.00
i. Quantity: Remove existing ballasted EPDM roof system and provide complete new single-ply membrane system = approximately 60,000 SF total.	60,000	SF	$34.00	2,040,000.00
b. Repair exterior brick veneer walls				0.00
i. Quantity: Repoint existing brick at cracked mortar joints = approximately 1,500 SF total.	1,500	SF	$31.28	46,920.00
ii. Quantity: Replace existing cracked, damaged, or displaced bricks = approximately 500 SF total.	500	SF	$156.40	78,200.00
iii. Quantity: Cut brick and install new control joints at outside corners at 32 locations x 22 LF each = approximately 704 LF total.	704	LF	$115.60	81,382.40
2. Interior Finishes:				0.00
a. Adhered acoustical ceiling panels				0.00
i. Quantity: Adhere acoustical tile panels to existing exposed concrete ceilings = approximately 54,200 SF total.	54,200	SF	$11.56	626,552.00
b. Suspended acoustical ceiling tile system				0.00
i. Quantity: Install suspended acoustical tile ceiling system below existing exposed concrete ceilings = approximately 54,200 SF total.	54,200	SF	$8.84	479,128.00
3. Fixtures, Furnishings, and Equipment: [See Sections G and H]				0.00
4. Auditorium:				0.00
a. Replace seating and carpeting				0.00
i. Quantity: Replace auditorium seating = approximately 402 seats total.	402	EA	$414.80	166,749.60
ii. Quantity: Replace auditorium carpeting = approximately 5,000 SF (including risers) total.	5,000	SF	$7.14	35,700.00
5. Accessibility: [See Section J]				0.00

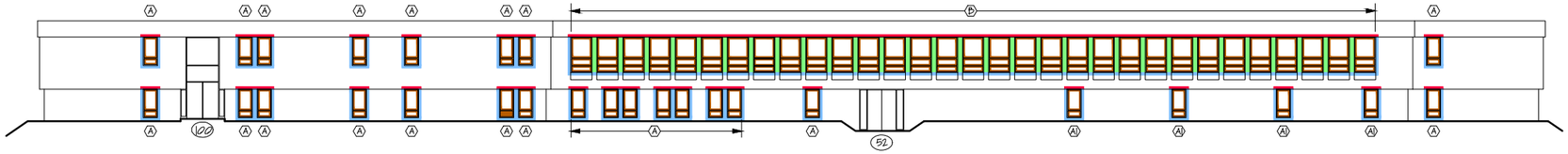
WESTPORT MIDDLE SCHOOL - SEPTEMBER 20, 2013	QUANTITY	UNIT	UNIT COST	TOTAL
6. Site:				0.00
a. Remove and reconstruct exterior brick walls				0.00
i. Quantity: Remove and reconstruct exterior solid brick walls x 12" thick = approximately 3,100 SF total.	3,100	SF	$76.16	236,096.00
ii. Quantity: Remove and replace exterior steel handrails (upper and lower) at exterior ramps = approximately 120 LF total.	120	LF	$258.40	31,008.00
7. Mechanical Systems:				0.00
a. Replace unit vents and air handlers				0.00
i. Quantity: Replace all unit ventilators and air handlers x 115,000 gross SF x $9.50 to $13.00 per SF = approximately $1,092,500 to $1,495,000.	115,000	GSF	$17.68	2,033,200.00
b. Replace hot water piping and finned tube radiators			$0.00	0.00
i. Quantity: Replace and insulate all hot water piping x 115,000 gross SF x $5.00 to $7.50 per SF = approximately $575,000 to $863,500.	115,000	GSF	$8.16	938,400.00
c. Provide direct digital control building automation system				0.00
i. Quantity: Replace existing controls with new DDC system x 115,000 gross SF x $4.00 to $5.00 per SF = approximately $460,000 to $575,000.	115,000	GSF	$5.44	625,600.00
d. Replace roof fans and repair associated ductwork				0.00
i. Quantity: Replace roof fans and repair ductwork x 115,000 gross SF x $2.00 to $3.00 per SF = approximately $230,000 to $345,000.	115,000	GSF	$3.40	391,000.00
e. Replace hot water circulation pumps				0.00
i. Quantity: Replace hot water pumps = approximately $20,000 to $25,000.	1	LS	###	35,020.00
f. Replace HVAC system in its entirety with new high efficiency system				0.00
i. Quantity: Replace HVAC system in its entirety x 115,000 gross SF x $25.00 to $35.00 per SF = approximately $2,875,000 to $4,025,000.	115,000	GSF	$54.40	6,256,000.00
8. Electrical Systems:				
a. Replace electrical, data, and communications system in its entirety				
i. Quantity: Replace electrical, data, and communications system in its entirety x 115,000 gross SF x $X to $X per SF = approximately $XX to $XX.	115,000	GSF	$20.40	2,346,000.00



1. SOUTH ELEVATION
SCALE: 3/32"=1"-0"



2. NORTH ELEVATION
SCALE: 3/32"=1"-0"

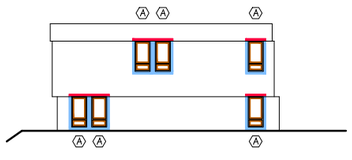


3. EAST ELEVATION
SCALE: 3/32"=1"-0"

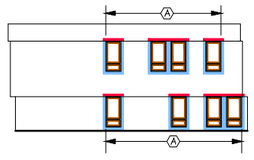
4. WEST ELEVATION
SCALE: 3/32"=1"-0"

LEGEND

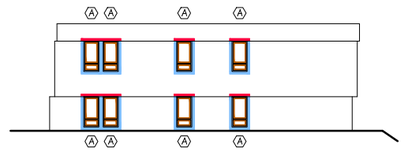
- WINDOW TYPE
- DOOR NUMBER
- REMOVE, AND SUBSEQUENTLY REBUILD, ONE WYTHE BRICK VENEER @ JAMBS AND ONE COURSE BRICK @ SILLS
- REMOVE, AND SUBSEQUENTLY REBUILD, BRICK VENEER PIERS
- SCARIFY, AND SUBSEQUENTLY PARGE, EXISTING CONCRETE BEAMS
- PCB-CONTAINING INTERIOR GLAZING COMPOUND TO BE REMOVED WITH WINDOW SYSTEM



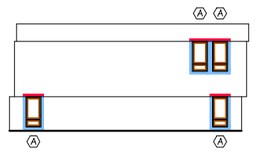
5. EAST ELEVATION
SCALE: 3/32"=1"-0"



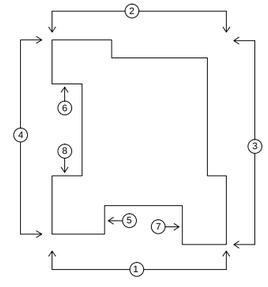
6. SOUTH ELEVATION
SCALE: 3/32"=1"-0"



7. WEST ELEVATION
SCALE: 3/32"=1"-0"



8. NORTH ELEVATION
SCALE: 3/32"=1"-0"



KEY PLAN
SCALE: NTS

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

SCALE: 3/32"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EV

EXTERIOR ELEVATIONS

NOTES

EXISTING TECTUM FORM PLANK...

1. AT STAIRWAYS
2. ABOVE EXISTING MECHANICAL EQUIPMENT & DUCTWORK
3. AT TOPS OF PARTITION WALLS
4. ABOVE SOFFIT AT MOVABLE PARTITION
4A. ABOVE SOFFIT AT PARTITION
5. AT VENTILATION CLOSET
6. ABOVE SUSPENDED CEILING
7. AT CEILING
8. ABOVE SOFFIT / SUSPENDED CEILING AT KITCHEN (VIF.)
9. ABOVE KITCHEN COOLERS & FREEZERS (VIF.)
10. ABOVE SOFFIT AT TEACHER DINING.

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

SCALE: 1/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

LOWER LEVEL:

REMAINING TECTUM FORM PLANK

2A

NOTES

EXISTING TECTUM FORM PLANK...

1. AT STAIRWAYS
2. ABOVE EXISTING MECHANICAL EQUIPMENT & DUCTWORK
3. AT TOPS OF PARTITION WALLS
4. ABOVE SOFFIT AT MOVABLE PARTITION
4A. ABOVE SOFFIT AT PARTITION
5. AT VENTILATION CLOSET
6. ABOVE SUSPENDED CEILING
7. AT CEILING
8. ABOVE SOFFIT / SUSPENDED CEILING AT KITCHEN (VIF.)
9. ABOVE KITCHEN COOLERS & FREEZERS (VIF.)
10. ABOVE SOFFIT AT TEACHER DINING.

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

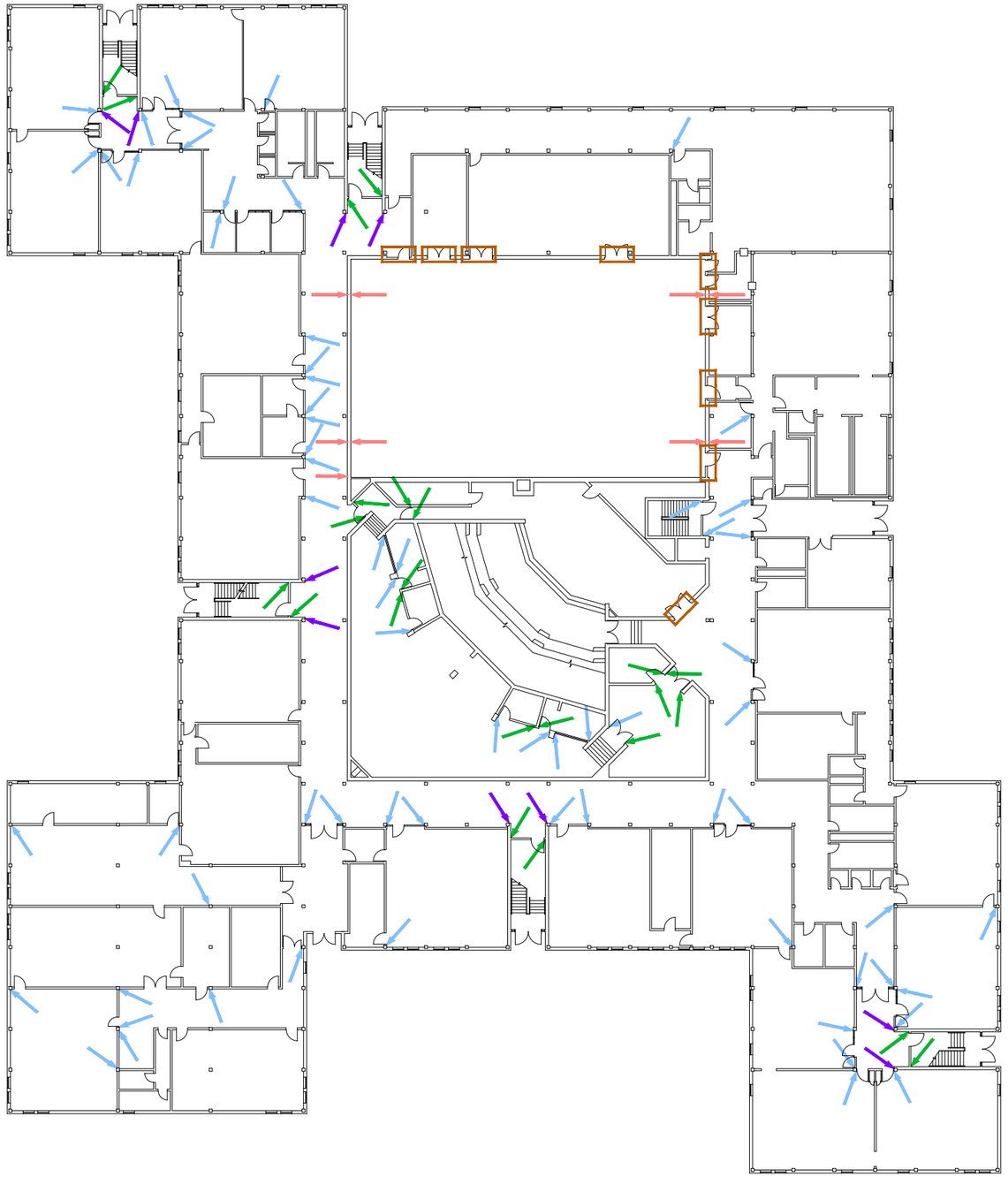
SCALE: 1/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

UPPER LEVEL:

REMAINING TECTUM FORM PLANK

2B



LEGEND

- JOINT AT BRICK TO CONCRETE AT STAIRWAYS
- JOINT AT BRICK TO CONCRETE AT WINDOW PIERS
- JOINT AT STEEL FRAMES TO BRICK VENEER
- JOINT AT STEEL FRAMES TO REINFORCED BRICK MASONRY WALLS
- JOINT AT STEEL FRAMES TO CONCRETE COLUMNS
- EXPANSION / CONTROL JOINTS IN REINFORCED BRICK MASONRY WALLS

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

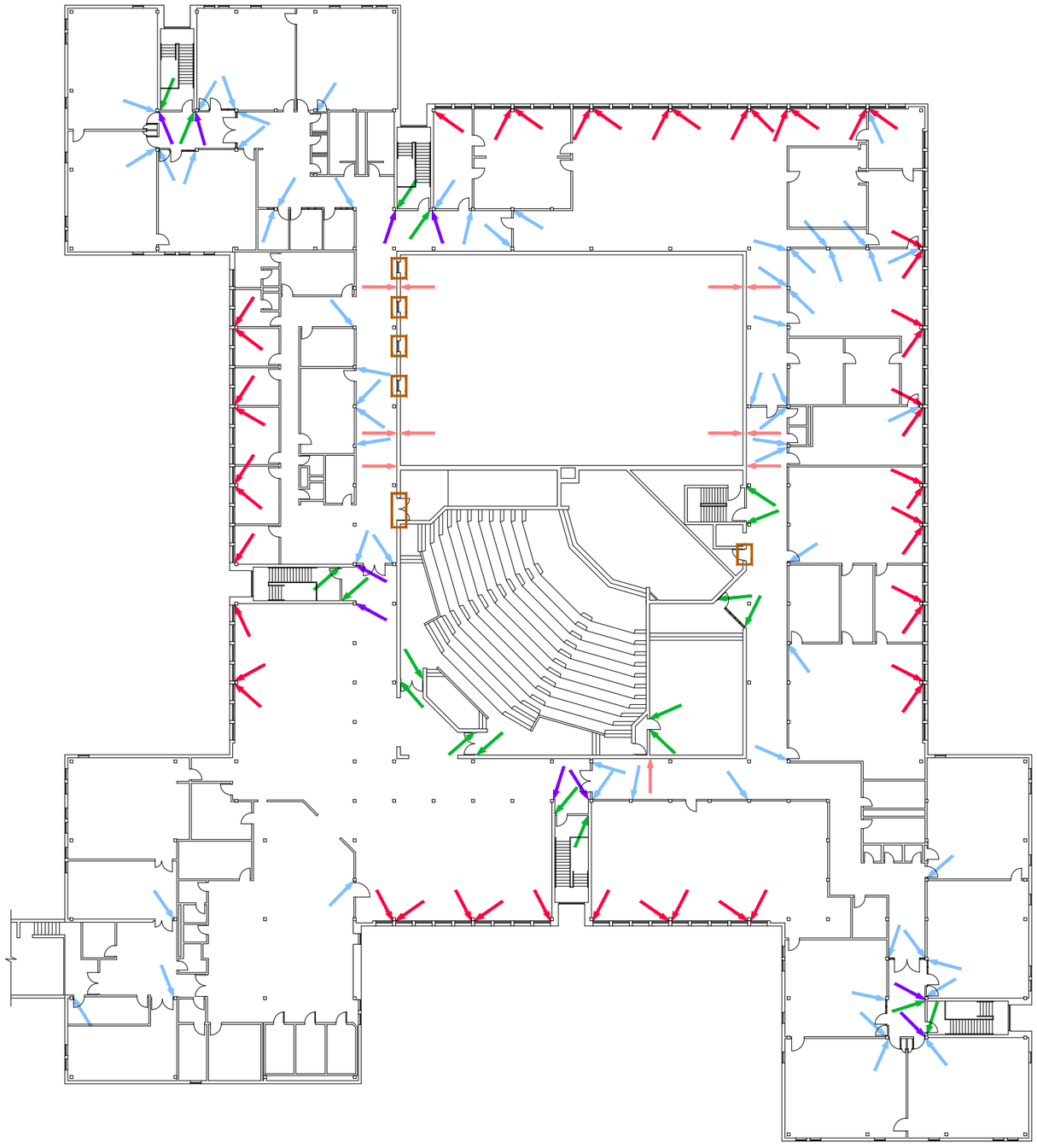
SCALE: 5/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

LOWER LEVEL:

INTERIOR CAULK JOINTS

3A



LEGEND

- JOINT AT BRICK TO CONCRETE AT STAIRWAYS
- JOINT AT BRICK TO CONCRETE AT WINDOW PIERS
- JOINT AT STEEL FRAMES TO BRICK VENEER
- JOINT AT STEEL FRAMES TO REINFORCED BRICK MASONRY WALLS
- JOINT AT STEEL FRAMES TO CONCRETE COLUMNS
- EXPANSION / CONTROL JOINTS IN REINFORCED BRICK MASONRY WALLS

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

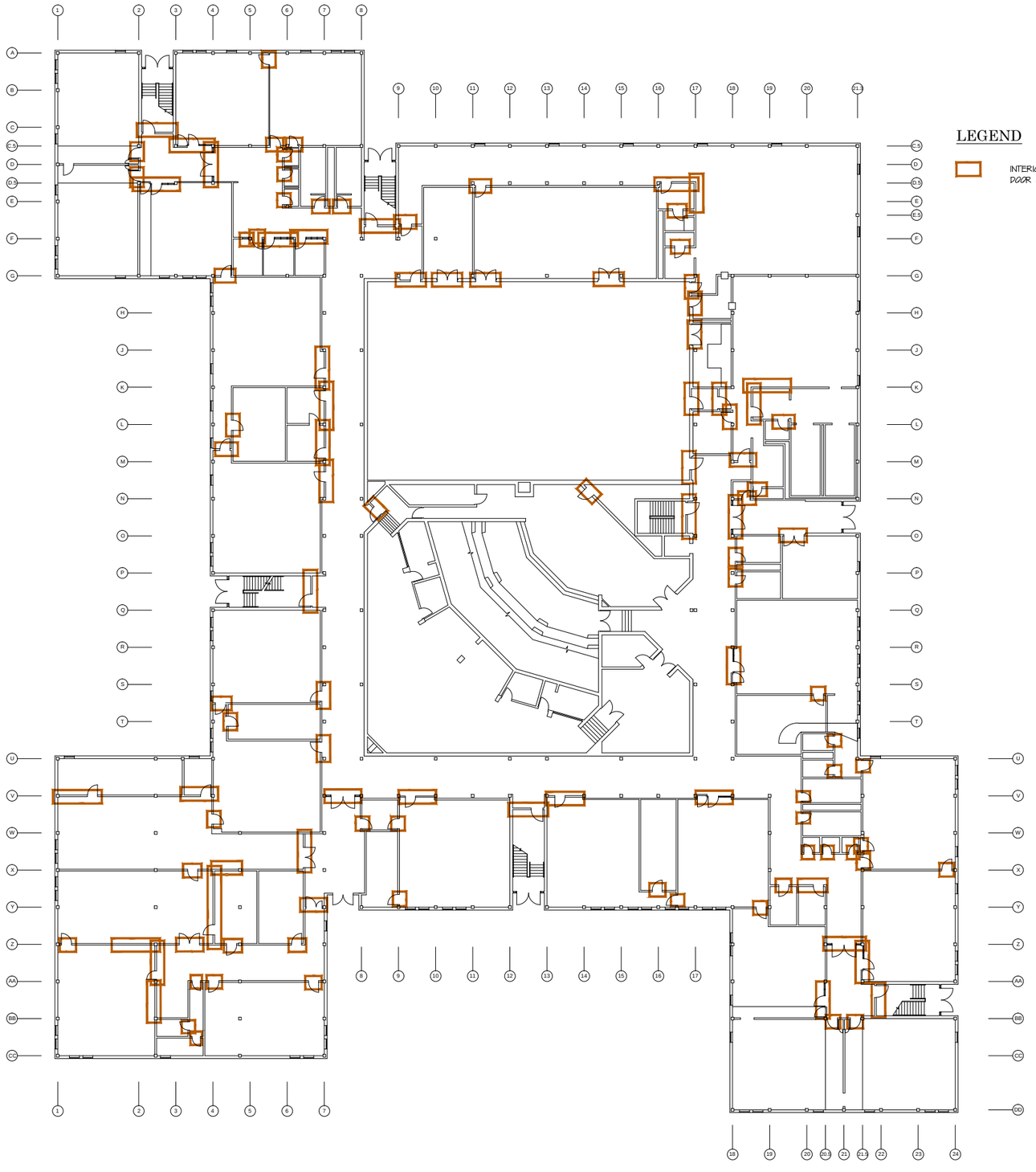
SCALE: 5/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

UPPER LEVEL:

INTERIOR CAULK JOINTS

3B



FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

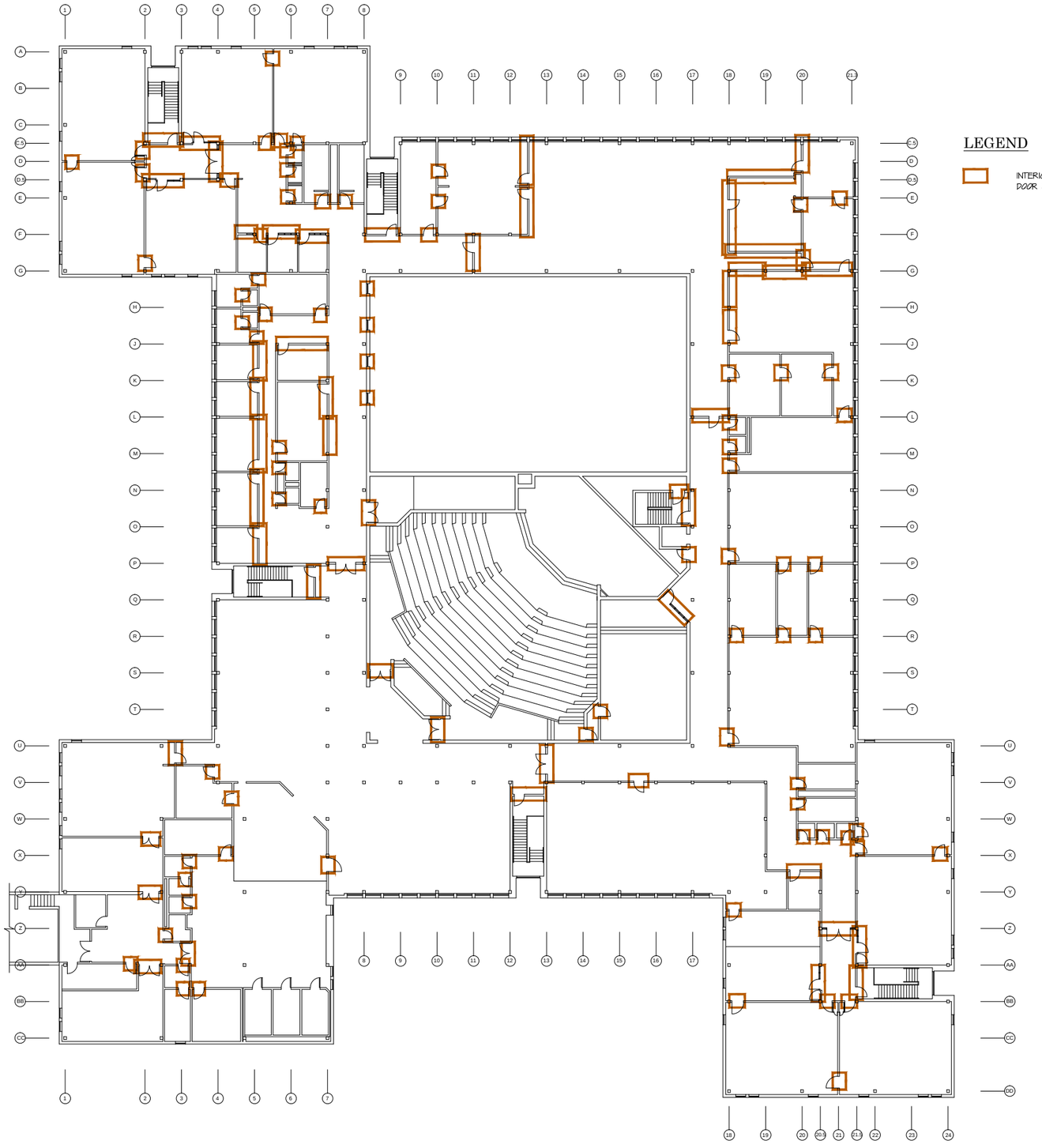
400 Old County Road
Westport, MA 02790

SCALE: 3/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EV

LOWER LEVEL:

INTERIOR DOORS & FIXED LITES



LEGEND

INTERIOR STEEL-FRAMED DOOR & FIXED LITE ASSEMBLIES

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

SCALE: 1/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

UPPER LEVEL:

INTERIOR DOORS & FIXED LITES

LEGEND

- TECTUM FORM PLANK REMOVED IN 2011 (SOME AREAS YET TO BE REMOVED, SEE DWGS. 1A & 1B); PROVIDE NEW ACOUSTICAL CEILING TREATMENT.
- REMOVE EXISTING SUSPENDED ACOUSTICAL CEILING TILE SYSTEM; PROVIDE NEW SUSPENDED ACOUSTICAL CEILING TILE SYSTEM.
- REMOVE TECTUM FORM PLANK AT STAIRWAYS; PROVIDE NEW ACOUSTICAL CEILING TREATMENT.
- REMOVE TECTUM FORM PLANK AT EXTERIOR SOFFITS; ENCAPSULATE CONCRETE.
- CONSTRUCT NEW FASCIA / SOFFIT FOR EDGE OF NEW SUSPENDED ACT SYSTEM.

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

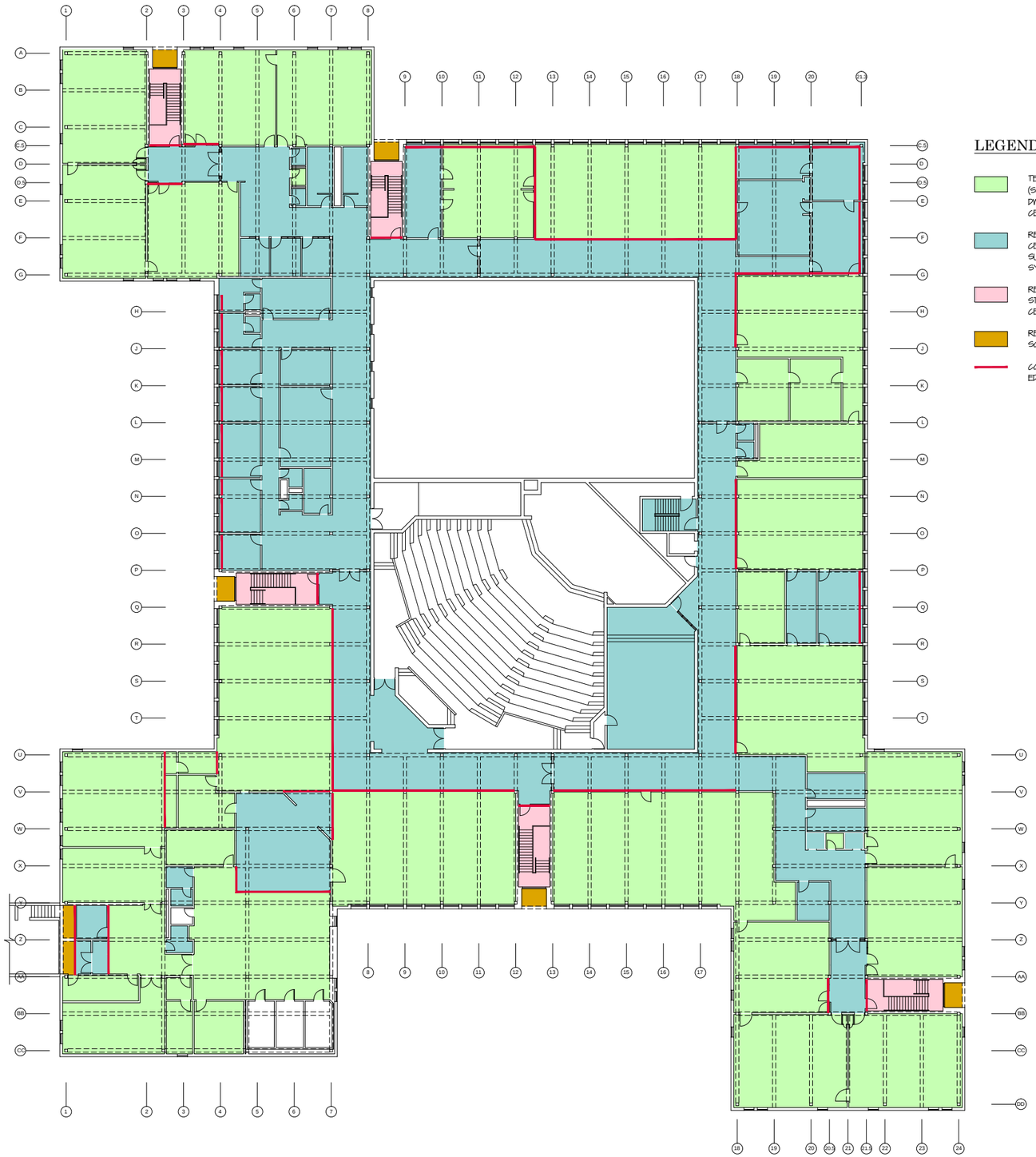
SCALE: 1/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

LOWER LEVEL:

PROPOSED CEILING TREATMENTS

5A



LEGEND

- TECTUM FORM PLANK REMOVED IN 2011 (SOME AREAS YET TO BE REMOVED, SEE DWGS. 1A & 1B); PROVIDE NEW ACOUSTICAL CEILING TREATMENT.
- REMOVE EXISTING SUSPENDED ACOUSTICAL CEILING TILE SYSTEM; PROVIDE NEW SUSPENDED ACOUSTICAL CEILING TILE SYSTEM.
- REMOVE TECTUM FORM PLANK AT STAIRWAYS; PROVIDE NEW ACOUSTICAL CEILING TREATMENT.
- REMOVE TECTUM FORM PLANK AT EXTERIOR SOFFITS; ENCAPSULATE CONCRETE.
- CONSTRUCT NEW FASCIA / SOFFIT FOR EDGE OF NEW SUSPENDED ACT SYSTEM.

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

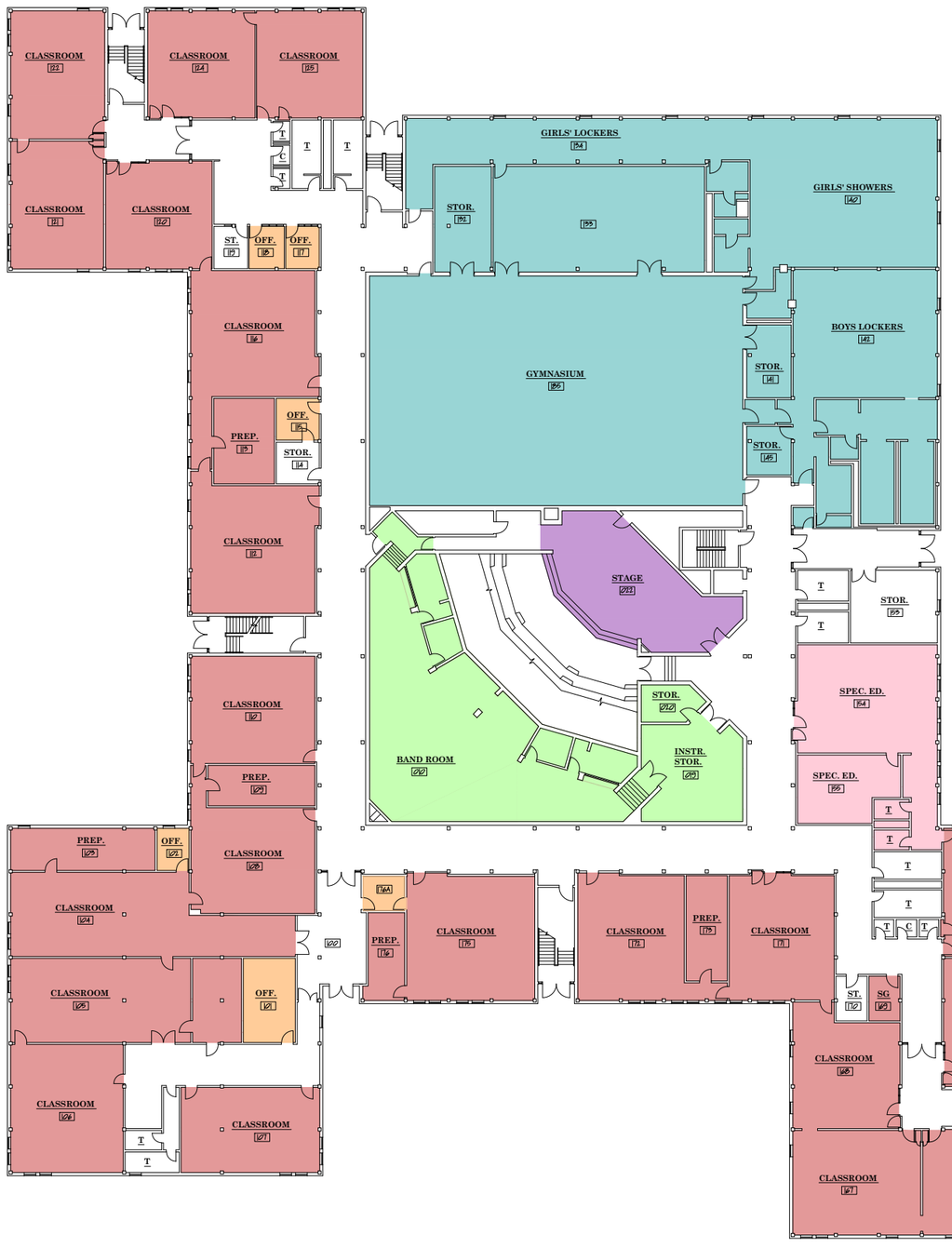
400 Old County Road
Westport, MA 02790

SCALE: 5/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

UPPER LEVEL:

PROPOSED CEILING TREATMENTS



LEGEND

- CORE ACADEMIC SPACES
- SPECIAL EDUCATION
- ART & MUSIC
- TECHNOLOGY
- HEALTH & PHYSICAL EDUCATION
- MEDIA CENTER
- DINING & FOOD SERVICE
- MEDICAL, ADMIN. & GUIDANCE
- CUSTODIAL & MAINTENANCE
- AUDITORIUM

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

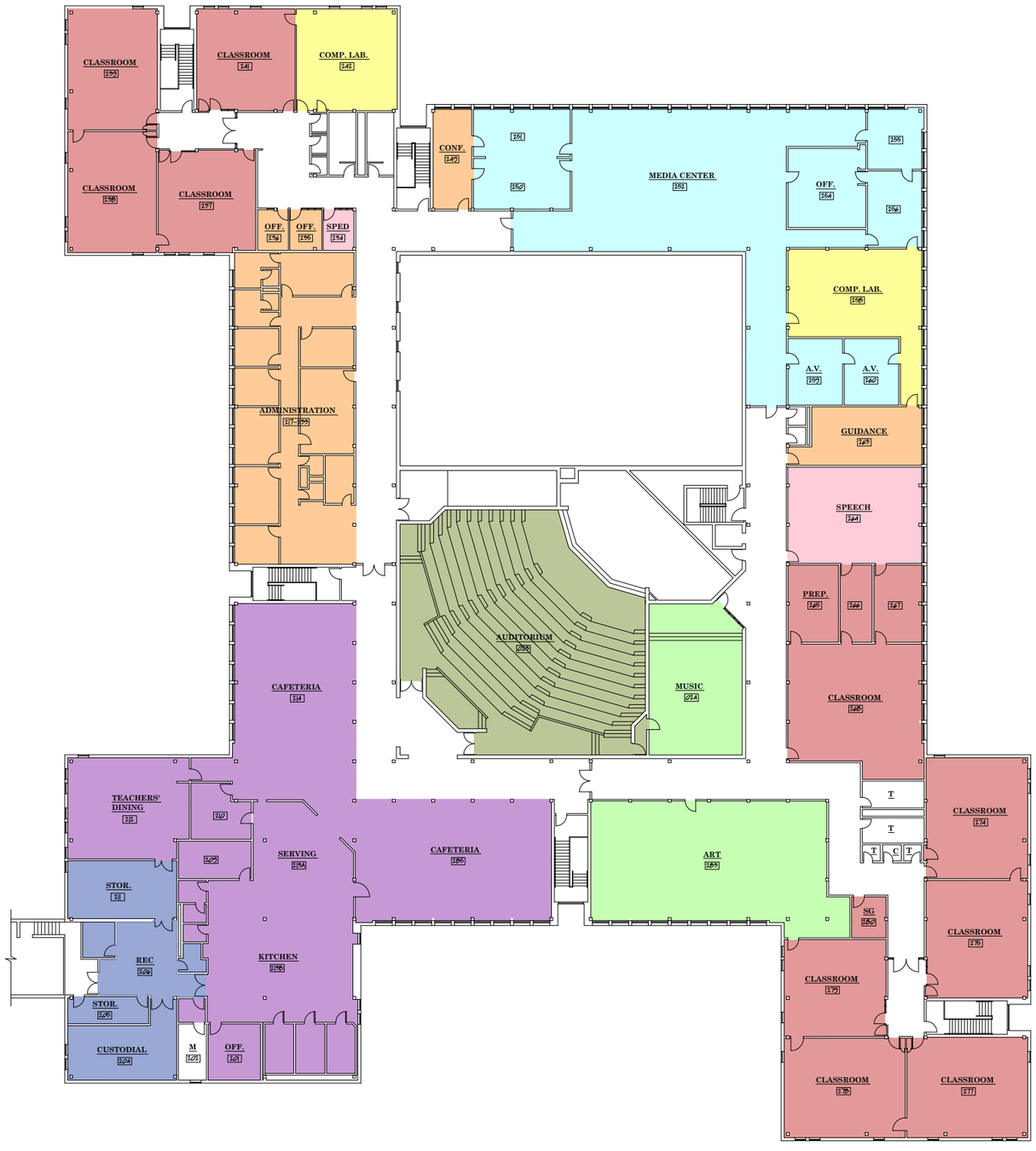
400 Old County Road
Westport, MA 02790

SCALE: 3/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

LOWER LEVEL: SPACE USE

6A



LEGEND

- CORE ACADEMIC SPACES
- SPECIAL EDUCATION
- ART & MUSIC
- TECHNOLOGY
- HEALTH & PHYSICAL EDUCATION
- MEDIA CENTER
- DINING & FOOD SERVICE
- MEDICAL, ADMIN. & GUIDANCE
- CUSTODIAL & MAINTENANCE
- AUDITORIUM

FEASIBILITY STUDY FOR THE ONGOING USE OF WESTPORT MIDDLE SCHOOL

CG**KV** Architects, Inc.

204A Hampshire Street
Cambridge, MA 02139
Tel. 617-504-8196
Fax. 617-812-6364
cgkvarchitects.com

TOWN OF WESTPORT

Westport Community Schools
19 Main Road
Westport, MA 02790

WESTPORT MIDDLE SCHOOL

400 Old County Road
Westport, MA 02790

SCALE: 5/64"=1'-0"
DATE: SEPTEMBER 23, 2013
REVISIONS:

DRAWN BY: EZ

UPPER LEVEL: SPACE USE

6B